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THE  
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## DISEASES CAUSED BY BACTERIA AND FUNGI

RITCHIE, J. M., MURRAY, D. L., & HOLGATE, M. (1947.) An outbreak of staphylococcal food-poisoning.—*Lancet*. 253. 256-257. 450

An outbreak of food poisoning involving 171 people which was due to a trifle heavily infected with *Staph. aureus* is reported. At the bakery which had supplied the trifle one operative had nose, throat, ears and a stye all heavily infected with *Staph. aureus*; another gave three colonies of *Staph. aureus* from a nose swab. Phage typing revealed that the clinically obvious source could be excluded and that the organism obtained from the trifle was identical with the organisms found in the nose of the lightly infected person.

—A. MAYR-HARTING.

HOLMBERG, C. G., & WINBLAD, S. (1944.) Purification and concentration of streptococcal fibrinolysin from broth cultures.—*Acta path. microbiol. scand.* 21. 833-837. [In English, authors' summary copied *verbatim*.] 451

Experiments have been performed aiming at purification and concentration of haemolytic streptococcal fibrinolysin by means of precipitations with absolute alcohol and ammonium sulphate and adsorption on aluminium C<sub>7</sub> in series. The activity per mg. dry weight of the fibrinolysin thus treated is increased to 22 times that of the original fibrinolysin. A method of assessing the activity of the fibrinolysin is described. The properties of the purified fibrinolysin are of protein nature. It can, diluted to 1 : 5,000,000, dissolve a fibrin clot within 10 minutes if no antienzyme is present.

HADLEY, P., & WETZEL, V. (1947.) Conditions contributing to streptococcal virulence. II. Intra-phasic attenuation by sulfanilamide.—*J. Bact.* 53. 67-81. [Authors' summary copied *verbatim*; for previous part, see *V. B.* 14. 47.] 452

The first paper in this series showed that the virulence of a culture of greening streptococcus in the smooth phase and of low virulence, isolated from a hospital patient dying of subacute bacterial

endocarditis, could be greatly enhanced while the culture remained in the same phase. This was referred to as an instance of *intra-phasic* variation in virulence as contrasted with *inter-phasic* variation, the latter involving transformations in culture phase.

The present paper shows that this derived, virulent culture, when submitted to serial passages in increasingly strong concentrations of sulfanilamide in a broth culture medium, progressively lost its high virulence while, at the same time, retaining the same culture phase. The manner of growth gave no evidence of any marked bacteriostasis. Thus in both instances wide fluctuation in virulence occurred without necessity for the organisms to enter either the mucoid or the rough phase. The widest fluctuation was, however, associated with inter-phasic variation involving, in this case, the rough but not the mucoid.

The significance of these observations in relation to one mechanism of sulfanilamide therapy, together with their possible relation to the problem of virulence and to the infective process in endocarditis, is briefly considered.

PLUM, N. (1945.) Tuberculin reactions in horse.—*Skand. VetTidskr.* 35. 31-48. [In English.] 453

A report of 2,473 intracutaneous tuberculin tests carried out on horses in Denmark. Both avian and bovine tuberculins were used in a dose of 0.1 ml. of 50% strength. Tests were read at 48 hrs. or at 48 and 72 hrs. Reactions of 3.5 mm. were considered positive. If the difference between the reactions to the two types of tuberculin was at least 0.5 mm. the animal was considered to be a reactor to the tuberculin giving the greater reaction and a co-reactor to the other. If the difference was less than 0.5 mm. the animals were considered double reactors.

The percentage of bovine reactors was found to be least among horses on an island, free from tuberculosis in cattle, and among army horses;

the percentage of avian reactors was also lowest in these groups. The horses belonging to a brewery were tested every year for six years and several horses were followed for the whole of this period as a result of which it was shown that the reaction was very labile as several of the horses changed their reaction during this period. A characteristic feature of this group of horses was the high percentage of co-reactors. Generally speaking, bovine reactors had avian co-reactions more frequently than avian reactors had bovine co-reactions. Autopsies were performed on four avian and two bovine reactors but in none of these were any signs, microscopic, cultural or macroscopic of tuberculosis seen. P. concludes that the tuberculin reaction is less reliable than in cattle. It is suggested that horses acquire reactivity by ingestion or inhalation of the appropriate tubercle bacilli but they are very resistant to infection.—A. A. WILSON.

GRÄUB, E., ZSCHOKKE, W., & SAXER, E. (1943.)  
Ueber tuberkulöse Reinfektion beim Rinde.  
[Reinfection of cattle with *Mycobacterium tuberculosis*].—*Z. InfektKr. Haustiere*. 59. 269-302. 454

An attenuated bovine culture of *Mycobact. tuberculosis*, called P-strain, was used for the experiments. A standard dose was injected subcutaneously which produced a local nodule and, as a rule, a corresponding enlarged lymph node, but no other signs of infection. While the first nodule was healing, another P-strain injection with twice the standard dose was made in a different place. A new nodule and corresponding enlarged lymph node were thus produced. This procedure was repeated several times. The injected animals were then exposed to natural infection under experimental unhygienic conditions and in close contact with actively infected cows for periods lasting from ten months up to seven years. None of these animals developed active tuberculosis. The authors discuss the possibility of producing resistant stock from an infected herd by such treatment.—E. KLIENEBERGER-NOBEL.

ANON. (1947.) Report of a conference on BCG vaccination.—*Publ. Hlth Rep., Wash.* 62. 346-350. [Conclusions and recommendations copied verbatim.] 455

BCG vaccine should not be made commercially available at present. From studies presented at the conference, it appears that BCG vaccination confers increased resistance to tuberculosis for the limited period covered in these studies. Medical literature fails to reveal any proved cases of progressive disease as a result of BCG vaccination. BCG vaccination can be done without causing severe local reaction. The

intracutaneous method of vaccination is recommended for use at present. In the studies presented, BCG vaccination converted a large percentage of nonreactors (to the tuberculin test) into reactors. Need for revaccination and the time interval between vaccination require further study. It was recommended that a single laboratory be established by the Tuberculosis Control Division to produce BCG vaccine for the entire United States for use in research programs proposed at the conference. Extensive investigations should be carried on cooperatively with recognised research groups throughout the nation, especially in population groups highly exposed to tuberculous infection. It was recommended that the Tuberculosis Control Division set up a controlled study in a community with a population of 100,000 or more, to determine immediate and long-range results. Further research is strongly recommended to determine the efficiency of the vaccination and also to attempt to develop a vaccine composed of dead bacilli. It was recommended that methods be developed to standardize techniques of preparation of a potent and stable vaccine for use in the United States and, if possible, throughout the world.

BLOCH, H., MATTER, E., & SUTER, E. (1947.)  
The effect of glycerol and related substances on the growth and the oxygen uptake of the tubercle bacillus.—*Amer. Rev. Tuberc.* 55. 540-551. [Spanish summary. Authors' summary copied verbatim.] 456

The influence of 12 different compounds, chemically related to glycerol, upon the respiratory metabolism and the growth of tubercle bacilli was investigated. The majority of the substances increased the oxygen uptake of the bacilli, but none was able to replace glycerol as nutrient in a synthetic medium. Several esters and ethers can be split by an enzymatic action of the bacilli and their liberated constituents further utilized in the bacterial metabolism. Many substances of different chemical nature are able to increase the oxygen uptake of tubercle bacilli, but this action often depends on the concentration of the substances and the pH of the medium, whereas glycerol was found to be much less affected by these factors. Additional effects on the bacterial respiration can be seen if glycerol is combined with acetic acid, but not with isoamyl alcohol, although both acetic acid and isoamyl alcohol increase the oxygen consumption of the bacilli. From this fact it can be concluded that the oxygen consumption of tubercle bacilli may be based on different respiratory mechanisms. The results of the experiments confirm that respiration and growth depend on two different metabolic systems. The latter seems to be more specific as to the metabolites which can be utilized.

JOHNSON, H. W. (1946.) Considerations in the control of Johne's disease. *Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946.* pp. 60-65. 457

Johne's disease is not a serious problem to American cattle owners, but is considered to be a potentially grave menace. This paper is a general review of the diagnosis, pathology, and control of the disease.—G. B. S. HEATH.

VAN ES, L., OLNEY, J. F., & BLORE, I. C. (1946.) Studies on the validity of swine erysipelas culture-vaccines.—*Res. Bull. Neb. agric. Exp. Sta.* No. 145. pp. 30. 458

Growth of the organism on various media and virulence towards pigeons have been used by the authors for judging the influence of various factors concerned in the preparation of vaccines against swine erysipelas. The authors give a somewhat brief account of their methods and calculations, particularly regarding definition and assessment of "validity"; this term being used for the pathogenicity of the culture as shown by the inoculation of pigeons, the proportion that die giving a percentage value for the "validity"; thus if all die the figure is 100%.

From the results the following conclusions are drawn. 0.5% glucose in the culture broth, a yeast treatment of the beef heart broth used, and a liver broth all had a depressing effect on the "validity" of the resulting culture. Room temperature incubation, storage, nature of glassware used, agitation, fat content and degree of putrefaction of the beef hearts used were without such effect.—R. SCARISBRICK.

BLAXLAND, J. D. (1947.) *Pasteurella pseudotuberculosis* infection in turkeys.—*Vet. Rec.* 59. 317-318. 459

B. describes outbreaks of disease among turkeys associated with an organism resembling *Past. pseudotuberculosis*. Mortality averaged about 20% and affected birds were all between the ages of eight weeks and six months. Death was usually sudden, some birds were ill for some days before death and others apparently recovered. Affected birds showed evidence of a yellowish diarrhoea, lameness and loss of appetite.

Liver and spleen frequently showed pale miliary foci and haemorrhagic inflammation of the duodenum and intestine. All cases yielded a pure growth of an organism which showed most of the characteristics of *Past. pseudotuberculosis*. The organism killed rabbits in 48-72 hours and g. pigs in 3-7 days. Rats trapped on two of the infected premises yielded a similar organism.

Suggested control measures include good sanitation, control of vermin and destruction of infected birds once the disease has been confirmed.—D. LUKE.

ISAENKO, E. P., & VASIL'CHENKO, I. V. (1937.) Puti zarazheniya telyat gemorragicheskoi septisemii. [Paths of infection in haemorrhagic septicaemia in calves.]—*Trud. vsezojuz. Inst. eksp. Vet.* 14. 132-137. [French summary.] 480

The authors studied routes of infection in haemorrhagic septicaemia in calves. Under normal conditions infection *per os* was ineffective; but keeping a calf in complete darkness lowered the resistance and infection *per os* then occurred. Infection readily took place *via* a fistula into the duodenum and also subcutaneous injection of the same amount of culture resulted in rapid infection. Intratracheal injection and intranasal injection yielded negative results. Injection of culture into the umbilical vein of a new born calf resulted in a certain degree of malaise but the calf did not die.—O. UVAROV.

GLÄSSER. (1944.) Ueber die fibrinöse Serosenzündung der Ferkel mit einer Besprechung einer kürzlich darüber erschienenen Arbeit von A. Hjärre und G. Wramby. [On fibrinous polyarthritis and serositis of piglets, with a discussion of a recent paper on the subject by HJÄRRE & WRAMBY (see *V. B.* 15. 238).—*Tierärztl. Z.* No. 1. pp. 7-9. 461

The demonstration by H. and W. of meningeal lesions, in addition to fibrinous inflammation of the joints and serous membranes, in the majority of cases of the condition described, suggests the use of the term "fibrinous serositis of piglets", in preference to fibrinous serositis and arthritis. However, it is suggested that the identification by H. and W. of the organism present in these cases as *H. influenzae suis* needs further confirmation. Comparisons are drawn between swine influenza and "fibrinous serositis" which indicate that they are separate disease entities, even if the bacterium present should prove to be identical in both diseases. Fibrinous serositis attacks pigs up to the age of four months, usually only after transport. The disease does not tend to spread to the other pigs of the buyer, nor to appear in the pigs remaining on the premises of the seller. Clinically, there is fever, severe prostration, and usually lameness with swollen joints. The disease runs a rapid course, death usually occurring in a few days.

—E. COTCHIN.

CRAIGIE, J., & FELIX, A. (1947.) Typing of typhoid bacilli with Vi bacteriophage.—*Lancet.* 252. 823-827. 462

The scheme used for phage typing of typhoid bacilli is described and it is proposed to explore its further possibilities, to design a typing scheme which will accommodate new types, and to provide international standards of Vi strains and of typing phages. Tests should be carried out only with

preparations from a central laboratory, as on propagation with certain bacteria the characters of a phage may alter or it may become contaminated. For standardization, every new batch of the agar medium should be tested with types N, O, T, and the series of phages ought to show the phage reaction of the standard in every detail. The methods of preservation of type cultures and phages are important. As low temperatures favour cross-reactions the temperature must be controlled accordingly.—A. MAYR-HARTING.

FELSENFELD, O. (1945.) **The salmonella problem. Practical laboratory applications of recent advances.**—*Amer. J. clin. Path.* 15. 584-608. **463**

This review dealing with the diagnosis of salmonella infections and the typing of isolated salmonella strains, includes the White-Kauffmann scheme for antigenic structure enlarged so as to cover all strains known up to June, 1945. The discussion on typing goes into the importance of not only diagnosing H and O antigens, but also takes account of V-W, S-R, and phase variations and it describes detailed methods. To be able to diagnose all known salmonella types 23 O sera, one Vi serum, and 36 H sera are required from which single factor sera can be obtained by absorption. For smaller laboratories this set of sera may be reduced to fit local requirements.

Some interesting problems are discussed: the definition of the genus *Salmonella*; the difficulties of preparing true statistics of the occurrence of salmonella types, owing to the fact that many small laboratories make a simple diagnosis but not a detailed antigenic analysis; suggestions are made as to the kind of sera that would be used to the best advantage by small laboratories; the significance of the lack of one of the usual O-antigens in an otherwise typical well-defined strain, which instead of showing the behaviour of a rough variant may cause higher lethality than other strains that contain the usual antigen; and complications with cross-reacting antigens, and salmonella antigens present not only in *coli* and *Paracolon* strains, but even in *pasteurella* strains or in pneumococci. In an appendix, formulae for culture media that F. has found most useful are given.—A. MAYR-HARTING.

WRIGHT, M. L. (1947.) **Selection of suitable antigenic strains of *Salmonella pullorum* by single colony isolation.**—*Canad. J. comp. Med.* 11. 68-74. **464**

Eight of 53 subcultures obtained from laboratories in the U.S.A. and Canada were in the rough phase. The standard strains of *S. pullorum* had become almost devoid of the XII<sub>2</sub>

factor, and attempts to increase this by selection were unsuccessful. Recently isolated strains were shown to be mixtures of standard and variant forms. By selection, pure strains possessing the composite antigenic structure of both standard and variant *S. pullorum* were obtained. Results of tests indicated that antigen prepared from such strains would detect both the standard and variant types of the infection. They are being further studied for suitability for use in serological tests.

—R. GWATKIN.

GRIBANOV, V. N. (1937.) Vaktsinatsiya telyat protiv paratifa v Bashkirskoi ASSR. [Vaccination of calves against paratyphoid (Salmonellosis) in the Bashkir Republic, U.S.S.R.]—*Trud. vsezojuz. Inst. eksp. Vet.* 14. 65-69. [French summary.] **465**

Vaccination of 2-6 week old calves against *Salmonella enteritidis* (GAERTNER) was unsuccessful in the Bashkir Republic, until 1931, when S. N. VISHELSKI prepared a formal vaccine, which was effective and reduced mortality from 23.1 to 1.5%.

The agglutination response of the calves to a single vaccination was good, and better when two inoculations were given.—OLGA UVAROV.

DEL PY, L. P., & KAWEH, M. (1946.) Existence de la brucellose en Iran. Isolement de *Brucella abortus*. [The existence of bovine brucellosis in Persia.]—*Arch. Inst. d'Hessarek*. 2. No. 2. 55-59. [In French.] **466**

An examination of a number of foetuses from a dairy farm near Teheran showed the presence of *Br. abortus*. The cultural characters of the organisms isolated were identical with the usual characters of *Br. abortus*, except that in all cases growth occurred in the presence of thionine even in a dilution of 1 : 15,000. Comparative cultures with imported strains showed that the thionine used was not defective. Vaccination with *Br. abortus* in lanolin and paraffin has been made but results are not yet available. The vaccine was incubated for five days at 370°F. and cultures made from it proved sterile, but inoculation tests for sterility were not performed.—S. J. GILBERT.

VERGE, J. (1946.) Les brucelloses des carnivores domestiques. [Brucella infection in dogs and cats.]—*Rec. Méd. vét.* 122. 97-114. **467**

V. reviews the literature on natural and experimental infection of dogs and cats, with brucella and its transmission to human beings. Of 82 dogs examined, in four there was an agglutination titre of 1 : 50 or more and in six a titre of 1 : 10-1 : 20. Cats and dogs behave similarly on exposure to infection, but neither are considered important in dissemination of the disease to man. Active or latent infection may occur.

As occurs in the horse, titres in the dog may oscillate and two or three tests are advisable at intervals of 10-15 days.—S. J. GILBERT.

MCCULLOUGH, W. G., MILLS, R. C., HERBST, E. J., ROESSLER, W. G., & BREWER, C. R. (1947.) Studies on the nutritional requirements of *Brucella suis*.—*J. Bact.* 53. 5-15. [Authors' summary copied verbatim.] 468

The nutritional requirements of a strain of *Brucella suis* were intensively studied, and a chemically defined medium was devised which gave yields greater than those previously obtained in any medium.

Thiamine (0.03  $\mu$ g per ml) and niacin (0.4  $\mu$ g per ml) (were essential for growth, and biotin (0.0001  $\mu$ g per ml) and calcium pantothenate (0.1  $\mu$ g per ml) were stimulatory, especially when small inocula were used.

Yeast nucleic acid or any of its component pyrimidines and purines stimulated early growth.

Cystine, histidine, tyrosine, phenylalanine, and tryptophane were essential for growth, whereas glycine, lysine, arginine, methionine, glutamic acid, isoleucine, aspartic acid, serine, and threonine were stimulatory.

Magnesium salts were essential, and manganese and iron salts were stimulatory.

One per cent glucose was required for maximum growth.

The addition of glucose, thiamine, and iron salts to "tryptose" broth increased yields 5- to 10-fold.

KAPLAN, A. M., & ELLBERG, S. (1946.) Concentration of *Brucella suis* from broth culture.—*J. Bact.* 52. 513-517. 469

In order to minimize the risk of infection from handling large amounts of pathogenic organisms, especially from centrifugation, an apparatus is described by which they are grown in a five-gallon carboy and collected on a filter bed. Preparations containing  $1 \times 10^{12}$  organisms per gram are obtained by this method. No loss of virulence of the cells occurs.—S. J. GILBERT.

KILCHSPERGER, G. (1946.) Zur Differenzierung der Brucellen. [Differentiation of brucella.]—*Schweiz. Arch. Tierheilk.* 88. 556-562. 470

K. states that the incidence of brucellosis in pigs in Switzerland has increased recently. German and Russian workers doubt whether pigs become infected with *Br. abortus*. Cattle do, however, occasionally contract *Br. suis* infection from pigs and may then spread the infection to pigs. K. discusses methods of differentiating the brucella species.—C. AHARONI.

BRAUN, W. (1946.) The effect of serum upon dissociation in *Brucella abortus*: a demonstration of the role of selective environments in

bacterial variation.—*J. Bact.* 52. 243-249. 471

A method was sought by which selected clones of *Br. abortus* strain 19 with a low dissociation index might be grown in broth under conditions necessary for vaccine production, the establishment of smooth organisms with changed dissociation indices being prevented. It was thought that this might be attained by the addition of antibodies for types which are not desired or by adding normal serum, such methods having been used successfully in transforming R types of pneumococcus into S types. Antisera were produced from rabbits by inoculation with suspensions of smooth, rough, or brown colonies which had all originated from a strain 19 (12A) of *Br. abortus*.

It was found that the serum or plasma of normal cows, rabbits, hogs and goats contain factors which suppress the establishment of rough and brown variants of *Br. abortus*. Dissociation is usually prevented by serum dilutions as low as 2%. When S antiserum is added some dissociated types do appear, but normal serum seems to contain factors which suppress rough and brown types and the use of antisera from these types seems unnecessary. Neither heating nor filtration removed the factors in the sera responsible for the suppression of dissociated types, and the suppression is not due to bactericidal or bacteriostatic activity.

Serum added to solid media does not prevent dissociation. The addition of 10% normal serum from non-reacting cows has caused a significant increase in viability during storage.—S. J. G.

JERSILD, M. (1941.) Phagocytosis employed as a serological test in brucellosis.—*Acta path. microbiol. scand.* 18. 108-110. [In English.] 472

A cytophagic test is described which differs from Huddleson's test in that serum is used instead of the patient's blood, citrated blood being obtained from a tested donor. In this method the serum need not be tested within six hours and it can be titrated. Further, by Huddleson's method the reaction develops as the patient becomes immune, whereas in the serum test opsonins are found to occur at an early phase of the disease, most frequently before the agglutinins. The serum is heated at 56°C. for half an hour before testing. Serum titrations are an advantage, for when opsonins are abundant phagocytosis is more active in diluted serum. The method of estimating the results is the same as that employed by Huddleson. The reaction is claimed to be more sensitive than either the agglutination test or the complement fixation test.—S. J. GILBERT.

GLASSMAN, H. N., & ELLBERG, S. (1946.) The

growth of *Brucella* in aerated liquid cultures.  
—*J. Bact.* 52. 423-430. 473

An apparatus is described which produces 15 litre amounts of *Br. suis* culture with uniform yield, high virulence and prolonged viability. The medium is continuously aerated and an anti-foam and air baffle of lard is used. It was shown that agitation either by inert gas or mechanical means does not produce the results achieved by aeration. Maximal yields were obtained at about 65 hours. The presence of 10% CO<sub>2</sub> was shown to be neither necessary nor beneficial to the liquid cultures. No dissociation occurs and a virulence was maintained equal to that obtained by using agar slant cultures.—S. J. GILBERT.

LAGNEAU, F. (1945.) Mammite gangréneuse de la vache. [Bovine gangrenous mastitis.]—*Rec. Méd. vét.* 121. 341-343. 474

A case of gangrenous mastitis in a cow due to *Cl. welchii* or *Staph. aureus* is described. A calf developed tympanic symptoms of the alimentary tract and subcutaneous oedema as a result of suckling the affected quarter.—B. WEITZ.

LUQUE, F. G. (1946.) Streptothricosis bovina en Colombia. [Actinomyces *farcinicus* infection in cattle in Colombia.]—*Rev. Med. vét., Bogotá.* 15. 1-19. 475

Investigations into a chronic lymphangitis of cattle in the area of Bogota revealed the causal organism to be *Actinomyces farcinicus*. The lesions resembled those described in the U.S.A. as skin tuberculosis, and affected animals

See also absts. 501 (B.C.G. vaccine); 503, 504 (swine erysipelas); 509 (salmonella antigens); 510, 511 (Fusiformis necrophorus); 540 (tular-aemia); 542, 543 (enteritis in swine); 559 (pathogenicity of bacteria); 560-570 (antibiotics); 571 (diasonine in treatment of TB); 590 (morphology of bacteria); 623 (technique); 629 (contagious abortion); 630 (tuberculosis); 631 (pleuropneumonia); 633 (contagious abortion).

### DISEASES CAUSED BY PROTOZOAN PARASITES

ROUBAUD, E., & CAUBET, P. (1944.) Essais d'immunisation chimio-biologique par le sulfarsénol dans les infections à *Trypanosoma gambiense* chez le rat. [Attempts at chemical-biological immunization using sulpharsenol in rats infected with *T. gambiense*.]—*Bull. Soc. Path. exot.* 37. 280-284. 478

Testing the immunizing value of the treatment of trypanosome infections in rats with sulpharsenol [sulpharsphenamine] it was found that, in the case of infections due to a septicaemic strain of *T. gambiense*, sufficient immunity was conferred to prolong the incubation period considerably beyond that of untreated controls. The same was true when the immunity test was made with a neurotropic strain of *T. gambiense*, but not when *T. evansi* was used. There was no mortality ascribable to the liberation of trypanosome toxin, such as has been claimed to occur with the re-inoculation of *T. rhodesiense* into rats cured by

gave a positive reaction to the tuberculin test.

Experimental work on the cultural requirements of the organism is recorded, and on its infectivity to experimental animals, g. pigs, rats and rabbits being found susceptible, and dogs and fowls resistant. The organism was polymorphic, and produced forms which were filterable through V and N Berkefeld filters.

Cases responded to surgical treatment, and penicillin treatment of a few animals gave apparently satisfactory results.—U. F. RICHARDSON.

PALMEIRO, J. M. (1945.) Nótula acerca da identificação da agalaxia contagiosa dos caprinos, em Portugal. [Contagious agalactia in goats in Portugal.]—*Repos. Lab. Pat. vet., Lisboa.* 6. 179-181. [English, French and German summaries.] 476

The organism of contagious agalactia was isolated from the milk of 12 goats in Portugal and was successfully cultivated in both solid and liquid media. When injected into the knee joint of a sheep, it caused a slight rise in temperature, and arthritis.—I. W. JENNINGS.

ØRSKOV, J. (1942.) On the morphology of peri-pneumonia-virus, agalactia-virus and Seiffert's microbes.—*Acta path. microbiol. scand.* 19. 586-590. [In English.] 477

This is a description of an improved technique for the demonstration of the morphology of these organisms. The method involves the direct microscopical examination of unstained colonies on agar blocks.—K. G. TOWERS.

sulpharsenol treatment, but the animals did become dejected, and it is suggested that the injection of trypanosomes into animals immunized in this way appears to result in the liberation of massive doses of a toxin.—U. F. RICHARDSON.

VERGE, J. (1946.) Le rôle du chien dans la transmission des leishmanioses humaines. [The dog in the transmission of leishmaniasis.]—*Rev. Path. Comp.* 46. 429-432. 479

In discussing the possible importance of dogs as a reservoir for human leishmaniasis, recent work indicates a considerable increase in canine infection, and considerable extension of the areas from which it has been recorded. These areas now include Paris, Toulouse, Lyon, Corsica, Spain, Portugal, Italy, Greece, Bulgaria and Yugoslavia. Affected dogs may appear to be quite healthy, and some evidence has been collected that such animals may be a danger to

man. Chronic canine infection may explain the perennial character of the human disease.

It is concluded that methods of early diagnosis, treatment and immunization of dogs are required, and work on the localization of canine disease is desirable, and more rigorous control of importation. In view of the difficult nature of control measures at the present time, work should be concentrated on diagnosis and treatment.

—U. F. RICHARDSON.

SWALES, W. E. (1947.) New methods of controlling caecal coccidiosis in chicks.—*Canad. J. comp. Med.* 11. 5-10. [French summary.] 480

Three plans are suggested. The first is for small producers and depends on dryness and cleanliness to keep down the number of oocysts and allow the birds to obtain immunity slowly and safely. The second plan applies to farms where the disease is expected annually in May and June. It involves the use of one oz. of sulphamerazine or sulphamethazine in 15 lb. of mash, or one oz. of the sodium salt in five gal. of water for three days. Secondary outbreaks five or more days later can usually be controlled by treatment for two days. The third plan is for large plants where groups of chicks are raised in rapid succession. This requires the establishment of a heavily infected pen. Chicks between the ages of two and four weeks are exposed in this for six days and treated with one oz. of drug in the daily feed or water supply of 850 to 1,000 chicks during this time.—R. GWATKIN.

MARVIN, H. N., & RIGDON, R. H. (1945.) Terminal hypoglycemia in ducks with malaria.

—*Amer. J. Hyg.* 42. 174-178. 481

The cause of death in acute malarial infections has been attributed to various mechanisms. In a study of the blood glucose levels in ducks infected with *Plasmodium lophurae* it was found that a marked terminal fall in blood sugar occurs. Death was not due entirely to the hypoglycemia as death did not occur in ducks injected with insulin and whose blood glucose fell to the same level as in the ducks in the terminal stages of malaria. Temporary loss of vision was observed in ducks injected with 60 units of insulin.—M. C.

SUTLIĆ, A. (1942.) Piroplazmoza (babezioza) pasa. [Canine piroplasmosis.]—*Vet. Arhiv.* 12. 302-307. [Abst. from German summary.] 482

Canine piroplasmosis was first diagnosed in hounds in Croatia, near Zagreb in 1939. *Babesia canis* was identified in blood smears, and *Dermacentor reticulatus* on the skin. Therapy with 1% trypanblue was unsuccessful, being followed by high temperature, diarrhoea, etc., and recurrence of piroplasmosis. Trypaflavine therapy

was also ineffectual. Acaprin in dosage of 0.05 ml. of 0.5% solution per kg. body weight effected complete cure. Three experimental dogs artificially infected were treated successfully with acaprin. The total number of animals was too small to allow of generalization.—K. J. SINCLAIR.

LAIZET, G. (1943.) Essais de traitement de la theilériose due à Theileria dispar dans la région de Tiaret. [The treatment of theileriasis caused by *Theileria dispar* in Tiaret (Algeria).] —*Rev. Méd. vét., Lyon et Toulouse.* 94. 153-483

It is explained that in the Oran district of Algeria considerable herds of cattle of European breed have been established, and that these animals are susceptible to the tick-borne protozoa. True piroplasmosis is rare, but diseases due to the small babesia, anaplasma and theileria occur in some years in a mild form, but in other years in a severe form with considerable mortality. Of all the parasites concerned *Th. dispar* (*Th. annulata*) is the most serious, and treatment is unsuccessful once clinical symptoms have developed. Experimental treatment was applied to animals in an infected herd in the pre-clinical febrile stage, diagnosis being confirmed by microscopic examination of the blood, but it is admitted that all the febrile reactions might not have been due to theileria.

Gonacrine (acriflavine) which has been recommended appeared to be ineffective, as did trypanblue, stovarsol (acetarsol) and novarsenobenzol (neoarsphenamine). In early experimental treatment intravenous injections of glucose solution to which camphorated spirit was added gave fairly good results, but the best results were given by the intravenous injection of a solution consisting of glucose 10 g., sodium chloride 7.5 g., distilled water 1,000 ml., formalin 10 ml. and camphorated spirit 5 ml. Depending on the size of the animal this was used at a dose of 250-500 ml., and repeated after 24 hours.

In two cases good results were also obtained by a first treatment with gonacrine, followed in 24 hours with a dose of the stock solution. It is suggested that if its value is confirmed this treatment should be used when there is a doubt in diagnosis, as gonacrine is valuable against the other blood parasites which may be involved. Cases treated with stock solution first, followed by gonacrine after 24 hours, suffered a sudden drop in temperature and died, but it is uncertain whether this result was due to the treatment.

—U. F. RICHARDSON.

SERDYUKOVA, G. V. (1939.) Eksperimental'nyi kleshshevoi rekurrens u shakala (*Canis aureus* L.). [Experimental tick-borne relapsing fever

in the jackal (*Canis aureus L.*.)—*Trav. Acad. milit. Méd. Kiroff Armée rouge.* 18. 51-57. [In Russian. English summary.] 484

The information as to the role of domestic animals as reservoir hosts in tick-borne relapsing fever of central Asia is reviewed, it being pointed out that little is known as to the susceptibility of carnivores. On feeding five ticks of the species *Ornithodoros papillipes*, infected with a strain of human relapsing fever, on a jackal whose blood had previously been free from spirochaetes, spirochaetes appeared in the peripheral blood after seven days, and persisted for 13 days. Blood taken from this animal 18 days after the disappearance of spirochaetes failed to infect g. pigs, and no recurrence of organisms in the blood occurred during the subsequent period of observation.

—U. F. RICHARDSON.

RANDALL, R. (1947.) Canine leptospirosis.—*Vet. Ext. Quart. Univ. Pa.* 47. 49-57. 485

A general account is given of the features of canine leptospirosis as seen in the U.S.A., the majority of infections being due to *L. canicola*. In discussing diagnosis it is pointed out that leptospira occur in the blood stream during the first week of infection, and begin to appear in the urine in the second week, but that darkfield examination has proved unsatisfactory, as have direct cultural methods, and g. pigs and mice are resistant. Hamsters have been found to be susceptible reacting to inoculation by the development of marked jaundice and death within 6-10 days. *L. icterohaemorrhagiae* gave similar results. Specimens of suspected urine are concentrated by centrifugation and the sediment suspended in 2-3 ml. of normal saline solution. As acid quickly destroys leptospira, 5-15 g. sodium bicarbonate should be administered to the dog the day previous to taking the urine specimen.

Emphasis has been placed on the agglutination-lysin tests as the most practical aids for diagnosis of leptospirosis, but measurable antibodies do not appear for 12-14 days after the onset of illness. In regard to treatment, immune serum lowers the mortality rate if given early. Penicillin has been found more effective than streptomycin, a dose of 10,000-15,000 units in 1 ml. given intramuscularly every three hours is suggested, recovery is said to occur regularly by the

See also absts. 572 (trypanosomiasis); 573, 574 (fowl malaria); 631 (trypanosomiasis).

#### DISEASES CAUSED BY VIRUSES AND RICKETTSIA

QUEVEDO, J. M., Jr., STURA, C. A., LOUSTAU, J. A. R., & TROVATO, O. (1945.) Liofilización de la vacuna contra la rabia paresante. Su envase, transporte e inyección—pruebas experimentales. [Freeze drying of the bovine rabies

time 200,000 units have been given.—U. F. R. STEINHAUS, E. A., & HUGHES, L. E. (1947.) Isolation of an unidentified spirochete from hen's eggs after inoculation with liver tissue from hens.—*Publ. Hlth Rep., Wash.* 62. 309-311. 486

Spirochaetes were present in incubated fertile eggs which had been inoculated with the liver suspension of apparently healthy hens, the embryos dying on the eighth to tenth days. The largest forms of the spirochaetes were 8-10 $\mu$  long and had four to six undulations, but many were much shorter, and sometimes mere granules occurred, most frequently in the cytoplasm of the cells of the yolk sac. The inoculation of these spirochaetes into hens did not produce clinical disease, and whether the organism was responsible for the symptoms in the original hens is not known. The relationship of this organism to *Borrelia gallinarum* is discussed, but in view of the morphology and lack of pathogenicity, it was thought to be a distinct species. The finding is of interest in view of the use of hen's eggs for cultures and the manufacture of vaccines.

—U. F. RICHARDSON.

BOK, R. (1940-41.) Het voorkomen van de rattebeetspiril in de oorspeekselklier van de muis. [The presence of *Spirillum minus* in the parotid glands of mice.]—*Acta leidensia.* 15-16. 143-151. [English summary.] 487

Investigating the claim that the spirillum of rat bite fever leaves the blood of rodents in the later stages of infection and invades the internal organs, particularly the salivary glands, sections of the parotid gland were examined with negative results. It was however found that emulsions of the parotid gland appeared to be more infective than blood, in that their inoculation into mice caused a more severe infection than did the inoculation of blood, after a shorter incubation period. This suggests that the saliva may be the source of infection in transmission by the bite, and not mouth wounds as has been supposed.

It was noted that in mice killed with coal gas, organisms were rarely detectable in the blood or organ juices, but if ether was used, all the blood and internal organs were positive at P.M. examination.—U. F. RICHARDSON.

vaccine.]—*Bol. tec. Direcc. gen. Ganad., B. Aires.* No. 18. pp. 7-14. 488

The vaccine used was a 33% equine brain suspension in physiological saline solution with the addition of 2-3% chloroform. The technique

of freeze-drying has been described in a previous communication [see *V. B.* 17. 182]. This present report gives the results of comparative tests of the liquid and dried vaccine in rabbits. In each case the rabbits were given six subcutaneous injections at daily or at two to four day intervals using a total of 6-12 ml. vaccine. About one month after the last dose of vaccine a virulent suspension was inoculated by means of an intracerebral injection. Protocols of six experiments are given in which a total of 17:17 controls died whereas 28:28 dried vaccine and 27:27 liquid vaccine test animals were unaffected. The result of a comparative test using horses performed by COLODRERO & VEGA is cited in which one subcutaneous dose of 10 ml. of either liquid or dried vaccine gave protection to nine horses against infective material inoculated by various routes sufficiently virulent to infect nine controls.

—W. M. HENDERSON.

DEBOER, C. J., & COX, H. R. (1947.) Specific complement-fixing diagnostic antigens for neurotropic viral diseases.—*J. Immunol.* 55. 193-204. 489

By extraction of virus antigen prepared from chick embryos with certain solvents (benzene, etc.), it has been found that cross fixation phenomena between neurotropic viral diseases and the false positives given when using human syphilitic and malarial sera can be avoided. The method is not involved and the prepared antigen has satisfactory keeping qualities.—K. G. TOWERS.

GRUBB, T. C., MIESSE, M. L., & PEUTZER, B. (1947.) The inactivation of influenza virus by certain vapors.—*J. Bact.* 53. 61-66. [Authors' summary copied verbatim.] 490

A simple *in vitro* method for testing the virucidal action of vapors from volatile substances is described. The infectivity of influenza A virus was completely destroyed by suitable exposure to the vapors of  $\alpha$ -naphthyl isocyanate,  $\beta$ -naphthyl isocyanate, phenyl isocyanate, and *p*-nitrobenzoyl chloride. Oxyquinoline, thiourea, oil of nutmeg, and oil of mustard showed very slight virucidal action. None of the other 40 compounds tested *in vitro* exhibited any appreciable virucidal activity. The influenza B virus was also inactivated by the vapors of  $\alpha$ - and  $\beta$ -naphthyl isocyanate.

The vapors of  $\alpha$ -naphthyl isocyanate did not protect mice infected with influenza A virus under the conditions of the experiment.

STENIUS, P. I. (1945.) The mode of appearance of equine infectious broncho-pneumonia (*Bronchopneumonia infectiosa*), and the pathologic-anatomical and histopathological changes in the disease—*Skand. Vet Tidskr.* 35. 65-94. [In English.] 491

A report of the investigations carried out by the state veterinary laboratory on a contagious disease of the equine influenza type which appeared amongst horses in Finland in 1941-42. This disease, which was called equine infectious broncho-pneumonia, resembled equine infectious pleuro-pneumonia in its clinical manifestations, but differed from it in pathology. The difficulties attending the study of the aetiology and differential diagnosis of the equine influenza diseases are discussed.—MARY C. LOBBAN.

THOMAS, L., & PECK, J. L. (1946.) Results of inoculating Okinawan horses with the virus of Japanese B Encephalitis.—*Proc. Soc. exp. Biol., N.Y.* 61. 5-6. 492

The serology of horses during an epidemic of Japanese B Encephalitis suggests that they may be intermediate hosts of the virus and that they may be of importance in the transmission of the disease to man by mosquitoes if the circulating blood contains virus.

The authors successfully infected one horse whose serum at first contained no neutralizing antibodies and on the third and sixth day the virus was recovered and identified. It was not recovered at the sixteenth hour nor on the ninth day when some antibody was present. The following day death occurred from an undetermined cause. Three other horses showed considerable antibody at the time of injection with virus and the infective agent was not recovered at any time up to the twelfth day.—K. G. TOWERS.

WALLER, E. F. (1944.) Blue comb disease.—*Proc. 48th ann. Meet. U.S. Live Stk sanit. Ass., 1944.* pp. 171-176. 493

W. discusses the epidemiology of Blue Comb Disease. Attempts were made to transmit the disease by injection and feeding of tissue suspensions from birds which had died from the disease. None of the inoculated birds died. Blood from birds showing symptoms of the disease was used to inoculate chick embryos and from those alive at 72 hours a filtrable agent was isolated. This has been carried through 260 transfers. In birds inoculated with this apparent virus there are many of the changes associated with blue comb disease. A marked leucocytosis is consistently noted.

The lesion on the chorio-allantoic membranes is described. Infected tissue stored in 50% glycerin remains infective for six weeks in the refrigerator. Infected chorio-allantoic membranes dried in vacuo remained infective for one year. A vaccine prepared from these dried membranes appeared to afford some protection against the disease.—D. LUKE.

JUNGHERR, E., & TERRELL, N. (1946.) Observations on the spread of Newcastle disease.—

Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946. pp. 158-171. 494

Whilst neutralizing antibodies for Newcastle disease were demonstrated in one Connecticut flock in 1942-43, it was not until October, 1945, that the first active outbreak was diagnosed by virus isolation. By October, 1946, 65 outbreaks had been diagnosed.

The average mortality in chicks was 23%, in growing stock 4% and in layers 1.8% accompanied in the latter group by an average fall in egg production of 75% and an average morbidity of 86%.

Observations indicated spread from commercial and breeder hatcheries to chick customers. Symptoms in chicks sometimes appeared within 24 hours after arrival from the hatchery and averaged 11 days after arrival.

Two successful virus isolations were made from egg-yolk from different sources.—F. D. A.

ANON. (1947.) Circular letter to transportation companies, district and boundary veterinary inspectors, etc.—*Canad. J. comp. Med.* 11. 31. 495

The contagious disease of poultry known as avian pneumo-encephalitis (Newcastle disease) exists in the U.S.A., therefore the Deputy Minister of Agriculture has issued an order prohibiting the import into Canada of live chickens, turkeys, pigeons, geese, ducks, barnyard fowl or other birds raised under domestic conditions, and the eggs from such birds for hatching purposes, unless the birds, or eggs, are accompanied by a certificate from an official of the U.S. Bureau of Animal Industry stating that to the best of his knowledge the birds, or eggs, originate from a flock which is free from and has not been exposed to Newcastle disease.—T. MOORE.

CUNNINGHAM, C. H., & STUART, H. O. (1947.) The pH stability of the virus of infectious bronchitis of chickens.—*Cornell Vet.* 37. 99-108. 496

Egg propagated infectious bronchitis virus having an infective titre of  $5 \times 10^6$  embryo M.L.D. per ml. was exposed at 4°C. to citrate, phosphate, and glycine sodium chloride buffers of various pH values. One part of infective allantoic fluid being added to nine parts of buffer solution. The mixtures were tested for infectivity at intervals without further dilution.

For the first 60 days the virus was more stable in an acid than an alkaline medium. From 60th-170th day there was a shift to greater stability in an alkaline than an acid medium. Virus in phosphate buffer at pH 7.79 remained infective for 170 days.—F. D. ASPLIN.

DONATIEN, A. (1943.) Les rickettsioses animales.

[Rickettsial infections in animals.]—*Rev. Path. comp.* 43. 98-102. 497

The genus *Rickettsia* is considered to include those organisms which pass through a development cycle in the mammalian host from large homogenous initial bodies to a morula stage, and a final fragmentation to minute elementary bodies.

Animal infections are classified as:—(1) Those with direct transmission; rickettsial conjunctivitis of ruminants and swine, and psittacosis. (2) Those transmitted by vectors. (a) Infections of endothelial cells; heartwater, *R. suis* infection of pigs and *R. avium* infection in birds, both the last two occurring in N. Africa. (b) Infections of monocytes; the tick transmitted rickettsia of dogs, sheep and cattle encountered in Africa.

The article contains nothing original, but gives useful references to the principal works on the various organisms and the diseases they produce.—U. F. RICHARDSON.

MC EWEN, A. D. (1947.) Tick-borne fever in young lambs.—*Vet. Rec.* 59. 198-201. 498

Two groups of lambs, born and kept on tick infested pastures which were "comparable as regards altitude and exposure" and were only a few hundred yards apart, were observed from April to June. No lamb was more than five days old at the beginning of the experiment. Each lamb had its temperature taken daily, and daily records were made of female ticks attached on axillae and thighs. Blood films from all lambs were taken on two occasions in May and June, and films were also made from all lambs with temperatures of over 105°F. Citrated blood collected from lambs with temperatures over 106°F. was examined for the presence of louping ill virus.

Tick-borne fever bodies were found in the blood of 39 (84%) of the 46 lambs in the experiment during the first two weeks of life, indicating the minor role played by any maternally transmitted immunity. Only six lambs failed to develop high temperatures or tick-borne fever bodies, and these were all in the more heavily tick infested group, 18 lambs developed a second temperature reaction, nine of them having tick-borne fever bodies, and this is considered to indicate a reinfection rather than recrudescence of the original infection. M. concludes that tick-borne fever in the lamb is a benign disease, which causes little constitutional upset.—G. B. S. HEATH.

JAMIESON, S. (1947.) Some aspects of immunity to tick-borne fever in hoggs [yearling sheep].—*Vet. Rec.* 59. 201-202. 499

Eighty of a group of 200 sheep which had been born and raised on a tick infested pasture were wintered away on a tick free pasture from

October, 1945, to April, 1946, when they rejoined the home wintered group of 120 sheep on the tick infested land. By May, 26 sheep were dead, 19 of these being from the group which had wintered away. These deaths are thought to have been

*See also absts. 505, 506 (influenza vaccines); 536 (poliomyelitis and nutrition); 543 (swine fever); 631, 632 (rinderpest).*

## IMMUNITY

RIMINGTON, C., & BICKFORD, J. A. (1947.) **Pre- and post-natal development of immunity.**—*Lancet.* 252. 781-785. [Authors' summary copied *verbatim.*] 500

Very little information exists about the serum-protein levels of full-term and premature infants.

Determinations have been made of the total protein, non-protein nitrogen, albumin, and globulin in the maternal and cord blood from 38 cases, mainly of premature birth, the youngest foetuses being twenty weeks old.

The foetal albumin and globulin increase with the length of gestation and at about the same rate. Mean full-term values were 4.16 g. per 100 ml. for albumin and 2.37 g. per 100 ml. for globulin.

The maternal albumin and globulin are not affected by the length of gestation in the period studied and are only slightly correlated with the foetal values.

The bearing of these results on immunity and the biosynthesis of the serum-protein is discussed, and it is suggested that there may be a foetal mechanism of synthesis of both albumin and globulin which becomes relatively less important as the adult mechanisms of synthesis develop and take its place. The serological immaturity of the newborn would be understandable on this basis, and evidence is brought forward in support of this suggestion.

Statistical treatment of the results shows that the regression coefficients of both albumin and globulin on length of gestation are highly significant.

HERTZBERG, G. (1947.) **Recent experiences with B.C.G. vaccination in Norway.**—*Tubercle. Lond.* 28. 1-9. 501

The expected increase of tuberculosis under war-time conditions led to a greater use of BCG vaccine although the Nazis stopped the mass vaccination programme. In 1944 a marked decrease was noted in the number of post-vaccination tuberculin positive patients. After eliminating restricted diet and change of tuberculin potency it seems likely this result was caused by weakening of the vaccine. This is also suggested by the decrease in the number of severe abscesses at the site of injection and while increased doses of vaccine gave better results for tuberculin

due to tick-borne fever. From this data, J. concludes that sheep returning to tick infested ground at the end of wintering should not be exposed to heavy tick infestation, as they will have lost their immunity to tick-borne fever.—G. B. S. HEATH.

positivity the local reactions became troublesome. A new BCG strain imported from the Pasteur Institute in 1945 seems likely to give more satisfactory results.

The Norwegian use of BCG vaccine is believed to have been harmless, to have produced lengthy duration of tuberculin positivity and to have given effective protection from tuberculosis in 75-90% of the persons injected.

Mass vaccination is therefore considered thoroughly justifiable, with many other measures, in a national campaign.—K. S. TOWERS.

DRYSDALE, A. (1947.) **A comparative study of phenolized and alcoholized T.A.B. vaccines.**—*J. Hyg., Camb.* 45. 46-49. [Author's summary slightly amended.] 502

A comparative study of alcoholized and phenolized T.A.B. vaccines has been made. No difference could be detected in the immunological potency of the two vaccines. The contentions of Felix and others that the reactions with alcoholized vaccine are less severe and "Vi" response greater than with phenolized vaccine are confirmed.

I. EKWALL. (1948.) **Genmäle till Om doseringen av rödsjukeserum för svin av Sven Wall.** [Reply to article by Wall on dosage of swine erysipelas serum for swine.]—*Skand. VetTidskr.* 33. 573-574. 503

II. WALL, S. (1948.) **Replik.** [Reply to Ekwall's Comment.]—*Skand. VetTidskr.* 33. 574-576. 504

I. E. suggests that Wall's teaching about the size of dose of antiserum which is necessary for the protection of pigs against swine erysipelas [see *V. B.* 17. 6], is incorrect. E. supports this by the fact that the Behring Institute advise that the dose should vary according to body weight; and also E.'s own impression from practice that small doses of antiserum give unsatisfactory results.

II. W. in reply disclaims allegiance to the Behring Institute advice and points out that his teaching is not based on theory, but on the results of experiments. He quotes one in which full-grown rabbits, and baby rabbits having a tenfold difference in body weight, were given the same doses of antiserum and culture. All the full-grown animals survived but half the baby ones succumbed to the specific infection.

E.'s impressions from practice are denounced by Wall as unscientific and hence not valid criticism of his own experiments, which have given clear-cut results.—J. E.

HARE, R., & MACKENZIE, D. M. (1947.) The standardization of influenza vaccine by red cell agglutination and antigenic tests in mice.—*Canad. J. publ. Hlth.* 38. 141-148. 505

Sixty lots of vaccine consisting of equal parts of influenza virus A and B suspensions, prepared by the method of Francis and Salk [see *V. B.* 13. 210] were tested for agglutinative activity for chicken red cells and for protective potency in mice. R.b.c. agglutination titres of over 1,000 for both components were shown by 53 lots; two lots had titres of 534 and 900 respectively for PR8, four lots had titres of 750 to 906 for Lee. In the antigenicity test, mice were inoculated intraperitoneally with two doses, a week apart, of 0.5 ml. of vaccine diluted 1:5 in testing for PR8 antigenicity, 1:500 for Lee. Seven days after the second inoculation the mice were given a challenging dose of 0.05 ml. of diluted mouse lung virus suspension intranasally under ether anaesthesia. Since the fresh mouse lung material, of varying infective titre, could not be previously standardized, it proved advisable, in order to administer the requisite number of LD 50s, to divide the mice into two or three groups to which different amounts of virus suspension were given. All lots of vaccine in the dilutions used protected 50% of mice against 10,000 LD 50s of PR8 virus and 1,000 LD 50s of Lee virus. Some lots protected against 1,000,000 LD 50s of PR8 and 10,000 LD 50s of Lee. Evidence was obtained that the ten times concentrate made by the r.b.c. elution method could usually be diluted considerably and still meet the requirements of the antigenic test in mice.—CHRISTINE E. RICE.

HARE, R., CURL, M., & MCCLELLAND, L. (1946.) The efficiency of the red cell adsorption and elution method for the preparation of influenza vaccine.—*Canad. J. publ. Hlth.* 37. 284-291. 506

The authors have described in considerable detail a red cell adsorption and elution method for the preparation of influenza virus A and B vaccines, a method first suggested for this purpose by FRANCIS and SALK [see *V. B.* 13. 210]. The adsorption was carried out in the cold, the elution at 37°C. The effect of certain changes in the procedure was studied experimentally. Variation in the time of chilling did not appreciably alter the result. Similarly, within certain limits, the relative volume of physiological saline used as a diluent did not affect the yield although it did influence the titre. There was however a definite

correlation between the concentration of r.b.c. used and the efficiency of adsorption; at r.b.c. concentrations below 0.5% the adsorption was poor whereas with 0.5% or higher there was a 70-93% recovery of PR8 virus, a 63-80% Lee virus. The yields were of much the same order of magnitude in large and small-scale production. The efficiency of this technique appeared closely comparable to that of other methods previously applied in the concentration and purification of influenza virus, notably the freezing and thawing method and differential centrifugation.—C. E. R.

BJØRNBOE, M., GORMSEN, H., & LUNDQUIST, F. (1947.) Further experimental studies on the role of the plasma cells as antibody producers.—*J. Immunol.* 55. 121-129. 507

Rabbits strongly immunized for several weeks with a formalized mixture of eight pneumococcus types developed a marked hyperglobulinaemia. The only constant finding in these animals was a diffuse, perivascular plasma cell proliferation in the adipose tissue of the renal sinus.

Using Heidelberger and Kabat's method for the quantitative chemical estimation of agglutinins, it was found that the adipose tissue of the renal sinus contained amounts of antibody protein significantly larger than in any other organ, particularly than in retroperitoneal fat in which only a few plasma cells were present. Analyses of lung, liver, muscle, thymus and lymph nodes were also made. The authors conclude that antibodies are produced by plasma cells and not by lymphocytes.

—J. A. NICHOLSON.

BESSIS, M., & FREIXA, P. (1947.) Ictère et anémie par ingestion de sérum hémolytique chez le rat nouveau-né. [Icterus and anaemia following ingestion of haemolytic serum in new-born rats.]—*C. R. Soc. Biol. Paris.* 141. 14-15. 508

With a view to throwing light on the problem as to whether new-born infants are capable of absorbing through the wall of the alimentary canal Rh antibodies which might exist in the mother's breast milk, the authors fed young rats with rabbit antiserum against rat red cells.

Young rats 10-30 days old were dosed by mouth with amounts of the immune serum varying from 0.15-2 ml. Adult rats as controls received amounts of 1-10 ml. of the serum *per os*.

All the rats younger than 22 days developed jaundice and haemolytic anaemia. The symptoms varied with the dosage, the most severe cases dying within eight hours. Young rats over 22 days old were not effected by the immune serum. Normal rabbit serum administered in the same way produced no untoward effect.—R. R. A. COOMBS.

CROSSLEY, V. M., FERGUSON, M., & BRYDSON, L.

(1946.) The use of soluble starch medium in the preparation of smooth "O" salmonella antigens.—*J. Bact.* 52. 367-371. 509

Salmonella strains gone entirely or partially rough could be made to return to the smooth form and to produce the smooth specific O antigen by culture on veal agar to which 2% soluble starch had been added.—A. M.-H.

I. REVNIVYKH, A. G., & BALABYRDINA, Z. A. (1940.) Allergicheskaya diagnostika nekrobatsilleza u severnykh olenei. [Allergic diagnosis of necrobacillosis in reindeer]—*Veterinariya, Moscow.* No. 8. pp. 10-14. [French summary.] 510

II. REVNIVYKH, A. G., & BALABYRDINA, Z. A. (1940.) Syvrotka protiv nekrobatsilleza olenei. (Predvaritel'noe soobshchenie.) An antiserum against necrobacillosis of reindeer. Preliminary report.]—*Ibid.* No. 3. pp. 15-18. [French summary.] 511

I. The preparation of an antigen for a skin test in necrobacillosis of reindeers is described and the results obtained with it are given. After extensive preliminary experiments in which various methods for the preparation of the antigen were used, the final antigen consisted of five day old cultures of *Fusiformis necrophorus* in meat infusion peptone liver broth. A mixture of five strains was used. The cultures were shaken, 0.5% formalin added and kept at 37°C. for eight days. Eye tests, intracutaneous and subcutaneous tests were tried on large numbers of four categories of animals; namely healthy, experimentally infected, naturally infected and doubtful. All eye tests were negative throughout. For the subcutaneous test 1-2 ml., for the intracutaneous test 0.2-0.5 ml. were used according to the age of the animal. Both tests gave good results. In positive cases a tender swelling appeared after a few hours and persisted for 2-3 days. In healthy animals only small painless swellings which disappeared after 12 hours occurred. There was a 100% correlation between the result of the intracutaneous

test in animals that were certainly healthy or certainly ill, and a correlation of 92.3% between the reaction and the P.M. findings in animals where the clinical diagnosis had been doubtful. The subcutaneous test to which, however, not such large numbers of animals were subjected showed complete correlation. The test is simple to carry out and easily read. It is quite feasible to apply it in the field and it allows the separation of infected animals with visceral lesions but no symptoms on their legs or in their mouths. The authors recommend routine testing of all reindeer herds twice a year.

II. By hyper-immunization of reindeer it was possible to produce an antiserum against *Fusiformis necrophorus*. The cultures of *F. necrophorus* for this purpose were grown in meat infusion peptone liver broth. For the first two injections the cultures were killed by adding formalin and kept in the incubator for eight days; the following two injections were carried out with cultures attenuated by growth at higher temperature. Then 10-12 injections of the living fully virulent cultures were given rising from 0.5 ml. to 50-75 ml. The actual doses and the time intervals between the injections were regulated according to the reaction of the animal to the preceding doses. From a dose of 8 ml. onwards local abscesses were formed which broke open and healed spontaneously; in the pus necrobacilli could be demonstrated. The blood of the animals was collected about one month after the last injection. To preserve the serum 10 ml. of 5% carbolic acid was added to 90 ml. serum. To test the sterility the sera were kept in the incubator for a fortnight. The immunization tests were carried out on reindeer and on rabbits. The serum was given 24 hours prior to test inoculation with the organism. Whereas all the control animals developed the typical disease, the animals immunized with serum showed only insignificant swellings which sometimes developed into small abscesses that healed spontaneously.—A. MAYR-HARTING.

See also absts. 455 (BCG); 458 (swine erysipelas); 465 (salmonellosis in calves); 478 (trypanosomiasis); 488 (rabies); 499 (tick-borne fever in lambs); 520 (complement and diet); 595 (immune proteins of colostrum).

## PARASITES IN RELATION TO DISEASE [ARTHROPODS]

SKRUINNIK, A. N. (1939.) K biologii kleshcha Ornithodoros verrucosus. [Contribution to the biology of the tick. *Ornithodoros verrucosus.*]—*Trav. Acad. milit. Méd. Kiroff Armée rouge.* 18. 43-50. [In Russian. English summary.] 512

Working on the biology of the new species of *Ornithodoros* (*O. verrucosus*) from North Caucasus it was found that oviposition occurred in the late summer and autumn. 68% of the third stage

See also absts. 577-587 (DDT); 634 (various arthropods).

nymphs moulted to adults, the remainder moulting to fourth stage nymphs. They thus differ from *O. papillipes* in which only 43% of the stage three nymphs moult to adults.

Measurements of larvae, first stage nymphs and adults confirmed that in these stages this species is smaller than *O. papillipes*. The length of the duration of each stage of development, from the egg to the adult, under the conditions of the experiment is recorded.—U. F. RICHARDSON.

## PARASITES IN RELATION TO DISEASE [HELMINTHS]

MUDALIAR, S. V., & RAMANUJACHARY, G. (1945.) *Schistosoma nairi* n.sp. from an elephant.—*Indian vet. J.* 22. 1-4. 513

A new species of schistosome from a 68-year-old elephant is described. The only symptom prior to death was gradual decline in health. Fifty-six males, 22 females and 26 copulating pairs were present in the portal vein. The males were stout, with 9.4 mm. mean length and 0.5 mm. maximum width, the females were slender and rather longer than the males, 10.5 mm. long and 0.25 mm. wide. The cuticle in the male is densely studded with coarse tubercles arranged longitudinally on the dorsal surface, the ventral surface being smooth,

*See also abst. 517, 518 (nutrition and parasitism); 598 (Heterakis gallinae).*

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS  
[INCLUDING FOWL PARALYSIS]

MAVER, M. E., THOMPSON, J. W., & GRECO, A. (1946.) Sulfhydryl groups in the cathepsin of rat lymphosarcoma.—*J. nat. Cancer Inst.* 6. 355-362. [Authors' summary copied verbatim.] 515

Purified preparations of the cathepsin of the Murphy rat lymphosarcoma were tested with several sulfhydryl reagents and were found to contain -SH groups which were essential for activity. These groups were oxidized, and the enzymes were inhibited with iodine and sodium iodosobenzoate. The cathepsin was also reversibly inactivated by *p*-chloromercuribenzoic acid. The quantity of *p*-chloromercuribenzoic acid needed for complete inactivation of the cathepsin was closely correlated with the total quantity of -SH

*See also abst. 628 (report of cancer research fund).*

## NUTRITIONAL AND METABOLIC DISORDERS

CHORINE, V., & TANGUY, Y. (1945.) Influence du régime alimentaire sur le parasitisme intestinal. [The influence of nutritional standard in France on intestinal parasitism in man.]—*Bull. Soc. Path. exot.* 38. 42-47. 517

An increase in parasitic infection of man in the Paris region was observed in 1940, corresponding to the beginning of a period of poor nutritional standard. The vegetarian nature of the diet at this time encouraged the growth of a bacterial population in the large intestine which produces carbon dioxide and volatile fatty acids; the resulting reaction, which would be more acid than when abundant protein was available, might have favoured the growth of intestinal parasites. The lack of soap, with resultant lowering of the standards of personal hygiene, might also in some

in the female the cuticle is devoid of tubercles.

The worm has been compared with *S. bomfordi* and *S. turkestanicum*, but it is considered to be a new species.—M. K. SREENIVASAN.

WINTERHALTER, M., & ERLICH, I. (1942.) Slučaj ikričavosti kod psa (Cysticercus cellulosae). [Cysticercus cellulosae infestation in a dog.]—*Vet. Arhiv.* 12. 300-301. [Abst. from German summary.] 514

A wolf hound 1½ years old, of forest stock, was found to be infested in different muscles with 100 cysts, later identified as *Cysticercus cellulosae*. Larvae were not detected in any of the parenchymatous organs.—K. J. SINCLAIR.

groups found by chemical titration of the cathepsin with sodium iodosobenzoate after denaturation with guanidine hydrochloride. The -SH groups essential for catheptic activity did not combine extensively with 3-amino-4-hydroxyphenyldichlorarsine hydrochloride or readily with the alkylating reagent, iodacetamide. The cathepsin was activated with sodium cyanide.

HOLE, N. H., & MARKSON, L. M. (1947.) Embryonal nephroma in the domestic fowl.—*Vet. J.* 103. 230-232. 516

The authors describe five cases of embryonal nephroma met with in a series of 312 avian tumours. Two of these neoplasms were extrarenal and were associated with the ovary.

A list of references is given.—A. R. J.

cases have been a factor in the increase in parasitism.—R. MARSHALL.

MANDOUL, R., & PAUTRIZEL, R. (1946.) Régime alimentaire, chimisme intestinal et parasitisme. [Diet and its relation to intestinal chemistry and parasitology.]—*Bull. Soc. Path. exot.* 39. 222-226. 518

The examination of stools showed that intense and multiple parasitism was accompanied by an increase in the amount of ammonia and amino acids present. As a rule, this increase was not revealed by measurement of the pH. It appeared that the predominance of the proteolytic flora, which engendered putrefaction accompanied by liberation of ammonia and amino acids, was the factor which alone or in conjunction with

excessive fermentation governed the multiplication of the intestinal protozoa, if not their establishment. The authors consider that a vegetarian diet promotes intestinal parasitism, not directly, but by producing fermentation and consequent acidity, accompanied by a hypersecretion of mucus. Putrefaction then ensues, and a condition favourable to the development of the parasites is established.—E. M. CRUICKSHANK.

FAIRBANKS, B. W., KRIDER, J. L., & CARROLL, W. E. (1945.) Effect of diet on gestation-lactation performance of sows.—*J. Anim. Sci.* 4. 410-419. 519

Experiments are described which demonstrate the great importance of an adequate supply of the water-soluble vitamins to the breeding sow. Gilts kept under drylot (indoor) conditions on a basal diet adequate in protein, carbohydrate, minerals, and vitamins A and D grew at a satisfactory rate but their breeding efficiency was low. The addition of dried corn distillers' solubles, alfalfa meal or crystalline B-vitamins to the basal diet improved breeding efficiency, fertility and the strength of the pigs farrowed. It is stressed that the diet fed during gestation is an important factor in producing good lactation. Alfalfa meal proved to be the most effective of the vitamin supplements used.

—MARY C. LOBBAN.

LÜHRS, E. (1943.) Untersuchungen über Komplement, häemolytische und komplementbindende Ambozeptoren. [Complement and haemolytic and complement-fixing amboceptors.]—*Z. InfektKr. Haustiere.* 60. 86-102. 520

L. describes experiments in which he investigated the effect of diet on the complementary and antibody activity of g. pig serum. Groups of g. pigs were fed exclusively for three weeks on oats, described as an acid diet, green food, described as an alkaline diet and a mixture of oats and green food, described as a neutral diet. At the end of this period blood was collected by cardiac puncture, the serum was diluted 1:10 with distilled water and  $\text{CO}_2$  gas was passed through it for 20 minutes. The albumin and globulin fractions of the thermolabile and the thermostable components of the sera were obtained and using red blood cells the complementary, the haemolytic and the agglutinating activities of specific sera were examined. L. makes the following conclusions. An acid diet augments the agglutinin activating factor of the complement globulin. An alkaline diet augments the haemolysin activating factor of the complement globulin. A neutral diet augments the haemolysin activating factor but to a lesser degree than an alkaline diet and the agglutinin activating factor is little stimulated. The activating capacity of the complement albumin is

not influenced by diet. The haemolytic antibody combines to the greatest extent with the complement albumin.—W. M. HENDERSON.

TEMPERTON, H. (1947.) The effects of husbandry factors on egg quality.—*Harper Adams Util. Poult. J.* 32. 27-34. 521

The factors which contribute to high quality in table eggs are described and discussed. Many factors such as size, colour of shell, porosity, quality of the white, etc., are determined by inheritance. The composition of the shell, the vitamin content and yolk colour are influenced by nutrition. Abnormal colours, flavours and tastes in eggs are discussed. The causes of these conditions are obscure. It has been proved that germinating acorns, the seed pods of shepherd's purse and pennycress and the bark of willow trees can cause abnormal coloured yolks but in many cases it appears that the defect is due to physiological upset of the excretory mechanisms.

Quality can be adversely affected by faulty methods of handling the eggs between the farm and the consumer and measures to avoid or minimize such damage are described.—M. C.

CHALKLEY, H. W., ALGIRE, G. H., & MORRIS, H. P. (1946.) Effect of the level of dietary protein on vascular repair in wounds.—*J. nat. Cancer Inst.* 6. 363-372. [Authors' summary copied verbatim.] 522

Methods for the quantitative study in vivo of the regrowth of vascular tissue in a subdermal wound in mice are presented.

A study in vivo was made of the effect of different dietary levels of protein (lactalbumin) on the rebuilding of the vascular bed in standardized, subdermal, excised wounds in mice. Three diets were used: low (7 percent) protein, "normal" (14 percent) protein, and high (60 percent) protein. It was found that both a low-protein diet and a high-protein diet (if the latter was administered for a relatively long period before wounding) greatly delayed vascularization, as compared with the time needed when a normal diet was fed. A change from normal to high-protein diet or the feeding of a high-protein diet for a short period (15 days) before wounding did not delay vascularization and is possibly beneficial. In all cases a large part (approximately 30 to 49 percent) of the vascular bed was restored in the wound area before the appearance of new vascular tips. The possible mechanism of this type of rebuilding is discussed.

DANOWSKI, T. S., ELKINTON, J. R., & WINKLER, A. W. (1944.) The deleterious effect in dogs of a dry protein ration.—*J. clin. Invest.* 23. 816-823. [Abst. in *Biol. Abstr. Sect. F.* 19. No. 5. 18. (1945), copied verbatim.] 523

Dry protein in small amounts (1.5 gm./kgm.)

without water maintains dogs in N equilibrium without change in the N excretion. Larger amounts of protein (2-7.2 gm./kgm.) increase the metabolism of protein and the nitrogenous end-products in the urine. The increased excretion of N necessitates a large urine volume, even when dehydration is present. Dry protein in amounts greater than that necessary for N equilibrium, without adequate supplies of water, increases dehydration and decreases survival time. Similar amounts of protein with an adequate intake of water (whole fish) will maintain dogs in an excellent condition for at least 4 weeks. In the dog, administration of carbohydrate can conserve water. The economy of body water results chiefly from a decrease in protein metabolism and in the amount of N necessitating excretion. In addition, the water of oxidation of the carbohydrate is made available.

HEYWANG, B. W. (1947.) Diets for laying chickens during hot weather. The protein level of the diet.—*Poult. Sci.* 26. 38-43. 524

The effects are reported of varying the protein level of the diet of laying pullets and hens on mortality rate, feed consumption, egg production and maintenance of live weight, during hot weather. From the combined results of experiments carried out over four summers it is concluded that there is no advantage in reducing the proportionate amount of grain in a mash-grain diet for laying chickens during hot weather.

—MARY C. LOBBAN.

TURK, K. L. (1947.) Some recent advances in animal husbandry.—*Cornell Vet.* 37. 135-148. 525

This is a review dealing mainly with the vitamin requirements of dairy cows and of calves. The use of thyroprotein for increasing the milk yield of cows is also mentioned as is the use of various endocrine hormones for improving the conception rate in cows. The need for adequate controls in experimental treatment with hormones is stressed if wrong conclusions are to be avoided. No references are given.—M. C.

SPIELMAN, A. A., THOMAS, J. W., LOOSLI, J. K., WHITING, F., NORTON, C. L., & TURK, K. L. (1947.) The relationship of the prepartum diet to the carotene and vitamin A content of bovine colostrum.—*J. Dairy Sci.* 30. 343-350. 526

Twenty-nine Holstein and four Guernsey heifers in good condition which had been on excellent pasture prior to experiment were divided into four dietary groups approximately 60 days before calving. The experimental rations were (1) a low-carotene ration of wheat straw and a concentrate mixture; (2) a standard dry-cow ration of concentrates, mixed hay and corn silage;

(3) the standard ration supplemented with one million I.U. of carotene daily and (4) the standard ration supplemented with one million I.U. of vitamin A daily. Samples of colostrum were obtained on the first day immediately after parturition, and on the third and seventh days.

The carotene and vitamin A levels in the colostrum are given both on a volume basis (*i.e.*, per 100 ml. colostrum) and on a per gram butterfat basis.

Statistical analysis of the results revealed that the carotene content per gram butterfat in the colostrum from the carotene-supplemented group was significantly higher than that from the other groups although the vitamin A content was not increased even after the daily addition of one million I.U. of carotene.

The vitamin A content per gram butterfat was significantly less in the colostrum of the low-carotene group than in that of the standard ration group.

The effects of vitamin A supplementation were marked; colostrum from cows receiving the supplement contained an average of 687 $\mu$ g per 10<sup>0</sup> ml. or 164.5 $\mu$ g per g. butterfat compared with average values of 374 $\mu$ g per 100 ml. or 91 $\mu$ g per g. butterfat from cows on the standard ration. These increases demonstrated that vitamin A content of colostrum may be influenced by the prepartum diet.—R. ALLCROFT.

SPIELMAN, A. A., LOOSLI, J. K., THOMAS, J. W., NORTON, C. L., & TURK, K. L. (1946.) Carotene utilization in the newborn calf.—*J. Dairy Sci.* 29. 381-391. 527

Eighteen calves, which had received no colostrum, were fed on skim milk and a basal ration low in carotene, but adequately supplemented with other vitamins. The first 11 calves received a transfusion of 500 ml. of maternal blood to provide protective immune bodies normally supplied by colostrum. A supplement of alfalfa meal, carotene in peanut oil or lard, or a carotene concentrate was given. Carotene utilization was poor, since scours occurred in all animals, and in addition the alfalfa and the carotene preparations proved unsuitable for the new-born calf. The remaining seven calves received 4-8 g. sulphathalidine daily *per os* for the first 7-10 days. This controlled the scours, and the calves utilized sufficient carotene from a commercial concentrate to provide for satisfactory growth and some storage of vitamin A in the liver.—E. M. C.

PIRIE, A., & WOOD, C. (1946.) Effects of vitamin A deficiency in the rabbit. 1. On vitamin C metabolism. 2. On power to use preformed vitamin A. *Biochem. J.* 40. 557-560. 528

In connection with studies on the effect of

vitamin A deficiency on the eye it was observed that the aqueous humour of the eyes of rabbits deprived of vitamin A had a lower content of vitamin C than that of normal rabbits. Some animals, tested after curative doses of vitamin A were given, showed improvement in the vitamin C content of the aqueous humour. The vitamin A content of the blood had usually decreased to 10-20% of the normal values before signs of deficiency could be detected in the eyes.

Six rabbits which had been deprived of vitamin A for more than six months failed to respond satisfactorily when given vitamin A in arachis oil. When these animals were given green cabbage their plasma vitamin A values rose to normal again. This appeared to indicate that the rabbit did not readily use preformed vitamin A after a long period of deprivation of the vitamin.

—A. M. COPPING.

NORTON, C. L., EATON, H. D., LOOSLI, J. K., & SPIELMAN, A. A. (1946.) Controlled experiments on the value of supplementary vitamins for young dairy calves.—*J. Dairy Sci.* 29. 281-288.

529

Sixty heifer calves were allowed to remain with their dams for 24 hours and were given the dams' milk for five days. Each calf was then fed a normal diet, including 350 lb. of whole milk over a period of 7-10 weeks. The addition, during the first month of life, of a supplement containing vitamins A, E, D and several members of the B complex did not improve the rate of growth nor reduce the incidence or severity of scouring.

—E. M. CRUICKSHANK.

HIBBS, J. W., KRAUSS, W. E., MONROE, C. F., & SUTTON, T. S. (1946.) Studies on milk fever in dairy cows. I. The possible role of vitamin D in milk fever.—*J. Dairy Sci.* 29. 617-628.

530

Studies involving 178 parturitions in four breeds of cows were made in which 1 million U.S.P. units of vitamin D as irradiated dried yeast were given daily for four weeks prior to, and one week after, parturition. The vitamin supplement did not prevent milk fever, but there was some evidence that in Jersey cows with a previous history of milk fever, the incidence was slightly reduced. In this breed the incidence of milk fever was 33% as compared with an average of 9.6% in Ayrshire, Holstein and Guernsey breeds. The incidence in Jersey cows was as high in summer as in winter.—E. M. CRUICKSHANK.

FERRARO, A., & ROIZIN, L. (1946.) Hemorrhagic diathesis experimentally induced by deficiency in vitamin K. A histopathological study.—*Amer. J. Path.* 22. 1109-1179.

531

White Leghorn chicks and albino rats were

given diets completely or partly lacking in vitamin K, inducing acute, mild or chronic symptoms of deficiency. Young animals were more susceptible to the deficiency than adult animals.

Examination of organs and tissues indicated similar pathological changes in both species. The most characteristic pathological changes were haemorrhages into all the organs, due in part to low blood prothrombin values and in part to changes in the blood vessels. Degenerative changes secondary to tissue haemorrhages were also observed.—A. M. COPPING.

BEEMAN, E. A., & ALLEE, W. C. (1945.) Some effects of thiamin on the winning of social contacts in mice.—*Physiol. Zool.* 18. 195-221.

532

Comparison was made of the effect of a surplus or deficiency of thiamine in the diet of closely in-bred adult mice on their aggressiveness and success in fighting. The mice which were housed separately in cages with wire-mesh floors, were brought together periodically for staged encounters. The addition of thiamine to an already adequate diet produced no increase in aggressiveness or in the ability to win fights, but the feeding of a diet rich in thiamine to mice which had been deprived of the vitamin for 15 days significantly improved their fighting capacity. Aggressive behaviour was not as a rule impaired by thiamine deficiency, some mice exhibiting aggressiveness after 27 days on the deficient diet. In other instances, the physical weakness which supervened as the result of the deficiency made aggressive behaviour impossible. It is concluded that social behaviour among mice is influenced by psychological rather than by physiological factors.

—E. M. CRUICKSHANK.

JENSENIUS, H., & NØRGAARD, F. (1942.) Studies on the effect of a pellagra-producing diet in dogs, with special reference to the histological changes in the central nervous system.—*Acta path. microbiol. scand.* 19. 433-447. [In English, authors' summary copied *verbatim*.] 533

An experiment with a pellagra-producing diet on young dogs resulted in a morbid condition resembling black tongue but lacking the characteristic oral symptoms of the latter.

The morphological changes produced in the central nervous system in these dogs showed agreement with the changes demonstrated by other investigators in black tongue. In the present dogs, however, the changes in the ganglion cells were particularly pronounced. Such changes were found also in sympathetic ganglia.

SHEAHAN, M. M. (1947.) The ascorbic acid content of the blood serum of farm animals.—*J. comp. Path.* 57. 28-35.

534

Ascorbic acid was estimated by indophenol titration in blood serum obtained from the Dublin abattoir from 250 cows aged 3-7 years, killed on account of sterility, loss of milk or disease, from 125 bulls aged ten months to seven years, killed on account of sterility or disease, from 200 healthy sheep and 150 healthy pigs. The results are tabulated according to the season when the samples were taken and there was a definite tendency for the values in all species to fall during the winter months and rise in the spring. The average values and the range of values in mg. per 100 ml. blood were 0.38 and 0.14-0.92 for cows; 0.40 and 0.18-0.98 for bulls; 0.34 and 0.14-0.54 for sheep; and 0.33 and 0.16-0.58 for pigs.

In 50 bulls the ascorbic acid contents of the serum, testis and epididymis were estimated. It was not possible to obtain the reasons for the slaughter of these animals but in many cases sterility was probably the reason since there was evidence of abnormalities in the reproductive tissues. There was, however, no apparent correlation between the ascorbic acid content of the serum and the testis and epididymis, and the values for these animals were within the normal range. The previous literature on the possible relation between ascorbic acid and sterility is briefly reviewed.—A. M. COPPING.

SHAW, J. C. (1947.) *Ketosis*.—*Vet. Ext. Quart. Univ. Pa.* **47.** 41-48. 535

Peculiarities of gait and posture and loss of appetite, of weight and of milk yield, following calving, may indicate ketosis. Milk fever may produce similar symptoms but in ketosis the blood sugar is reduced and the ketone bodies increased while the blood calcium is normal. Lack of adequate carbohydrate reserve, when milk secretion makes great demands on it, is the greatest factor in the development of ketosis, and a natural or experimental reduction in diet before calving will produce the condition. Injection of glucose intravenously is the best treatment. Good feeding is essential for prevention, however, molasses supplements before calving did not always prevent the development of ketosis.—R. MARSHALL.

— (1945.) *Nutritional deficiency and susceptibility to poliomyelitis and other infections*.—*Nutr. Rev.* **3.** 69-70. 536

A general review of the relation of the B group of vitamins to infection with viruses and bacteria. No new material is presented, the article being a review of the literature.—A. A. W.

VAWTER, L. R., & RECORDS, E. (1947.) *Muscular dystrophy (white muscle disease) in young calves*.—*J. Amer. vet. med. Ass.* **110.** 152-157. 537

Spontaneous muscular dystrophy in calves,

ten days to two months old is described. The skeletal and heart muscle lesions are very similar to those already described in "Stiff Lamb Disease". The condition may be peracute with death in a few hours. Such cases show prominent yellowish or greyish foci of myocardial dystrophy involving most of the left ventricle. In sub-acute cases the symptoms develop more slowly with increasing stiffness and reluctance to move about. In such cases the typical lesions are found in the skeletal muscles.

Atrophy of groups of muscle fibres with interstitial oedema and some leucocytic infiltration is observed microscopically. Most of the cases occurred between February and May. In all the herds where the condition occurred the cows had to subsist on a poor quality hay during the latter half of pregnancy. The similarity between the condition here described and that induced in lambs, rats, rabbits, etc., by diets deficient in vitamin E is stressed. The condition no longer appeared when the breeding cows were changed to green pasture or put on good quality alfalfa hay—both good sources of vitamin E—thus suggesting that these substances afforded the necessary protective factors.—D. LUKE.

STEINER, A., & KENDALL, F. E. (1946.) *Atherosclerosis and arteriosclerosis in dogs following ingestion of cholesterol and thiouracil*.—*Arch. Path.* **42.** 433-444. 538

Having failed to induce atherosclerosis and arteriosclerosis in dogs by feeding large amounts of cholesterol, the authors attempted to do so by inhibiting the mechanism for regulating cholesterol metabolism. Rather than remove the thyroid glands—with risk of incidental total or subtotal parathyroidectomy—they decided to inhibit the thyroid by administering thiouracil subsequent to and eventually along with the administration of cholesterol. Serum cholesterol determinations were made weekly by a modification of the Schoenheimer-Sperry method. Complete blood counts were made every two months. The dogs were finally killed by bleeding under pentobarbital sodium anaesthesia.

The feeding of thiouracil alone produced an increase of serum cholesterol, but this was followed by a much greater increase when cholesterol was added to the diet. As a result, atherosclerosis or arteriosclerosis was produced throughout the arterial system.—L. M. MARKSON.

ASHBURN, L. L., ENDICOTT, K. M., DAFT, F. S., & LILLIE, R. D. (1947.) *The nonportal distribution of the trabeculae in dietary cirrhosis of rats and carbon tetrachloride cirrhosis of rats and guinea-pigs*.—*Amer. J. Path.* **23.** 159-171. 539

This is an account of the histological study of the cirrhotic livers of choline-deficient rats, and rats and g. pigs treated with repeated subcutaneous administration of carbon tetrachloride. In both types of cirrhosis, the fatty changes and subsequent formation of connective tissue trabeculae were primarily related to the hepatic veins. These findings support the concept that the connective tissue proliferation occurs in the same location as the liver injury.—MARY C. LOBBAN.

MULLIGAN, R. M., & BECKER, D. L. (1947.)

**Residual tissue changes in male dogs following cessation of orally administered stilboestrol.**—

*Amer. J. Path.* 23. 299-311. [For previous article, see *V. B.* 15. 157.] 540

Residual histological changes were observed in the adrenal glands, prostate glands and bone marrow of five male dogs subsequent to the oral administration of stilboestrol. The dogs were autopsied at periods varying between 40 and 511 days after the cessation of dosing.

The adrenal cortex revealed signs of delay in

See also abst. 629 (pregnancy toxæmia of sheep).

## DISEASES, GENERAL

HUMPHREYS, F. A., & CAMPBELL, A. G. (1947.)

**Plague, Rocky Mountain spotted fever, and tularaemia surveys in Canada.**—*Canad. J. publ. Hlth.* 38. 124-130. 541

Surveys of the incidence of plague, Rocky Mountain spotted fever and tularaemia were initiated in Canada in 1938 by the Dominion and Provincial Departments of Health. Evidence obtained in the succeeding eight years indicated that plague is well established in ground squirrels in south-eastern Alberta and adjoining parts of Saskatchewan. Six of 817 tissue pools and 32 of 939 flea pools from 12,676 ground squirrels collected in Alberta, and two of 356 flea pools from 7,448 ground squirrels trapped in Saskatchewan were positive for *Pasteurella pestis*. Similar material from rats and mice from these areas and from other provinces was negative, as was that from ground squirrels in British Columbia and Manitoba.

Rocky Mountain spotted fever rickettsia have been isolated from five specimens from a total of 72,227 wood ticks, *Dermacentor andersoni*, collected in British Columbia and from ten specimens of 49,201 collected in Alberta. These strains of rickettsiae and one strain isolated from blood of a fatal case of Rocky Mountain spotted fever were of low virulence for g. pigs. *Past. tularensis* appeared to be widespread in the Western Provinces, having been encountered in 38 specimens from ground squirrels, rabbits,

the development of the fascicular cells from the glomerulosal cells and an earlier degeneration than normal.

The ducts and acini of the prostate gland, especially in the dorsal part of the lateral lobe revealed atrophy and squamous metaplasia. In the bone marrow, normoblastic hyperplasia was evident, due to the decrease in haemoglobin and erythrocytes at the height of medication.

The testes, penile sheath and mammae apparently returned to normal.

Spontaneous renal disease produced clinical and anatomical changes in one dog and caused clinical symptoms in another, probably due to the reduced ability of the kidneys to excrete the stilboestrol and its consequent accumulation in the blood to a much higher effective level than in dogs with normal kidneys.

All other organs, with the possible exception of the thyroid and pituitary glands had no residual effects attributable to stilboestrol.

—JOHN G. CAMPBELL.

mice, birds and ticks submitted from these areas.

—CHRISTINE E. RICE.

HASTINGS, C. C. (1947.) **Gastroenteritis of swine.**—*Cornell Vet.* 37. 129-135. 542

Under the collective title of gastro-enteritis of swine H. separates out the following fairly well defined clinical entities:—haemorrhagic enteritis (amenable to salt treatment), *Salmonella choleraesuis* infection, scours of baby pigs attributed to errors in the diet of the sow, [piglet anaemia is not mentioned] and grass scours seen in spring and early summer.

The difficulties of accurate diagnosis are stressed. The central pig house surrounded by heavily contaminated ground is regarded as a dangerous source of trouble. The value of rearing young pigs on clean ground is emphasized.—D. L.

DOYLE, L. P., & WALKEY, F. L. (1946.) **Attempts to reproduce enteritis in swine.**—*J. Amer. vet. med. Ass.* 109. 280-282. 543

Viscera and intestinal contents from field cases of enteritis were fed to 27 swine fever vaccinated pigs aged 3-5 months. All remained healthy except three which developed a transient diarrhoea.

Similar material was fed to six unvaccinated pigs all of which became ill within a week and three died within three weeks. P.M. examination of the latter revealed a well marked enteritis and lesions (not specified) in various organs, commonly found in swine fever.

Eight strains of *Salmonella cholerae-suis* were isolated from the material fed. The pathogenicity of six of these was tested by feeding 200 ml. of a 24-48 hour broth culture. All the ten pigs used in this experiment developed well marked diarrhoea commencing on the second or third day and three died within eight days.

The higher susceptibility of the non-vaccinated pigs to the viscera and intestinal contents indicates that swine fever may be a more important cause of enteritis than is generally recognized. The experiments do not substantiate the claim that *S. cholerae-suis* may cause enteritis under natural conditions and the authors suggest that the enteritis following the feeding of large doses of *S. cholerae-suis* may not be identical aetiologically with that in swine under natural conditions.

—D. LUKE.

LUKE, D. (1947.) "Round heart disease" in poultry.—*Vet. J.* 103. 17-20. 544

FISCHEL [see *V.B.* 17. 483] described mortality amongst fowls in New Zealand to which he gave the name "enzootic fatal syncope (toxic heart degeneration)". L. in this article describes 36 outbreaks of disease among poultry flocks in Northern Ireland, which bear a marked similarity to the condition reported by FISCHEL.

In all 481 deaths occurred amongst 3,214 fowls; the average mortality rate was 14.9%, but the individual flock mortality varied from 2-54%. The disease occurred among young pullets between the ages of three to eight months and only in two outbreaks were affected fowls over 12 months old; there were also three cases in young cockerels. The daily death rate seldom exceeded one or two fowls and was usually spread over a period of three to four months. All the outbreaks occurred between June and November.

The deaths took place with dramatic suddenness, often at feeding time when the fowls were running towards the feed bucket. In only one of the 36 outbreaks were any preliminary symptoms reported by the owner and in this instance, fowls were noticed to be dull and disinclined to move for about two hours before death. Affected fowls were always in good condition and no general setback was observed in the flocks during the period when the deaths were occurring.

The most striking P.M. finding was the unusual heart lesion which led L. to call this condition "round heart disease". The hearts were enlarged, bluish-pink in colour with the superficial blood vessels markedly congested; the typical tapering contour of the organ was lost, the ventricles being rounded in outline with the apex invaginated in some cases. The other changes were those generally associated with cardiac collapse; an excess of pericardial and abdominal

fluid, oedema of the lungs, often congestion of the liver or sometimes a yellowish jelly-like clot over the ventral surface.

Cultures prepared from all the usual tissues yielded negative results.—J. D. BLAXLAND.

HOGG, A. H. (1947.) Prostatic disease in the dog—Clinical manifestations and treatment.—*Vet. Rec.* 59. 47-53. 545

This is a clinical article based on symptoms and a few P.M. examinations. No histological examinations were made.

H. describes two main types of prostatic disease in the dog, one in which there is enlargement of the gland and the other which is characterized by marked contraction. He subdivides these groups and discusses their differential diagnosis and treatment with oestrogenic hormones. There was response in grossly enlarged glands, with contraction in size and relief of symptoms, but H. does not indicate in what proportion of cases this occurred.—A. R. J.

HARRISS, S. T. (1947.) Rupture of the tendo Achilles in chickens.—*Vet. J.* 103. 356-357. 546

Thirty-eight chickens out of over 1,000 which were examined P.M. during an investigation into the influence of isolation on the incidence of fowl paralysis, showed rupture of the tendo Achilles. The rupture was frequently clean but sometimes showed a ragged edge; alternatively, it was grossly swollen and increased to about five or six times its normal thickness. Symptoms were acute lameness and inability to use the affected leg from the hock downwards. Affected fowls were all between the ages of three and nine and a half months. There was no significant difference in the incidence between males and females. The condition occurred in different experimental groups as well as in stock birds fed on a variety of diets. No deficiency of manganese was apparent as in perosis and there was no indication of any accident or injury that might have caused the condition.—J. D. BLAXLAND.

MARTINČIĆ, M. (1941.) Patološko-anatomske i histološke promjene u atrioventrikularnom sistemu kod Adams-Stokesovog kompleksa simptoma u konja. [Pathology of changes, in the atrioventricular system of a horse with the Adams-Stokes syndrome.]—*Vet. Arhiv.* 11. 76-99. (Abst. from German summary.) 547

A *post-mortem* examination of a nine-year-old mare revealed anaemia, emaciation, oedema of the lungs, fluid in the pericardium and in the pleural cavity. There was dilatation of the ventricles and a small scar on the septum and one on the left ventricle.

On histological examination there was chronic

inflammation of the bundle of His and small foci of infection close to it.—K. J. SINCLAIR.

BOSNIĆ, L., & RAPIĆ, S. (1941.) Daljnja dva slučaja Adams-Stokesové bolesti kod konja. [Two further cases of Adams-Stokes disease in horses.]—*Vet. Arhiv.* 11. 166-179. [Abst. from German summary.] 548

In a horse with heart block the disease lasted nine months and was observed for the last eight months. The auricles contracted in regular rhythm, with a frequency of 50-70 contractions per minute, the ventricular action was however irregular and slow, with 16-22 contractions per minute. The long pauses in the action of the ventricle (up to 40 sec.) led very often to Adams-

See also abst. 493 (blue-comb disease).

Stokes phenomena which were repeated almost daily. On some days there were 100 attacks. Total block was confirmed by electrocardiograph. Death occurred suddenly in one of the attacks. The heart was dilated and histological examination showed chronic inflammation of the Aschoff-Tarvara node and the bundle of His.

The second horse died of partial heart block and was observed for only four days. Partial heart block 3:1 was found which frequently passed into complete block of the ventricle with severe Adams-Stokes symptoms. The horse had suffered periodic attacks over a period of eight to nine months and performed heavy work in spite of them. Chronic inflammation of the His bundle was present.—K. J. SINCLAIR.

## POISONS AND POISONING

MURRAY, M. M., & WILSON, D. C. (1946.) Fluorine hazards: with special reference to some social consequences of industrial processes.—*Lancet.* 251. 821-824 & 825. 549

After citing examples of acute and chronic fluorosis in Great Britain the authors describe a case of environmental fluorosis from a farm in Lincolnshire where chronic F. intoxication in cattle resulted from fumes derived from the local calcination of ironstone [a native iron carbonate]. Clinical, radiological and biochemical examinations of members of the farmer's household established that contamination due to the fumes containing F. compounds had materially affected the health of the inhabitants leading to a mild chronic endemic fluorosis. The authors, in emphasizing that F. hazards are not sufficiently appreciated, make a strong recommendation that in all industrial processes involving F. the fumes should be extracted before being passed into the atmosphere, and call for an investigation to ascertain the nature and location of industrial undertakings where a possible F. hazard may be created. Emphasis is laid on the need for a better intelligence service and co-ordinating mechanism to ensure collaboration between industries, Government departments, local authorities and interested research workers.—A. EDEN.

CLARK, B. M. (1946.) Arsenical poisoning of humans resulting from cattle-dipping tanks.—*S. Afr. med. J.* 20. 518-519. 550

Two outbreaks of arsenical poisoning in human beings are described, which involved a number of people, causing about 20 deaths. These were attributed to contaminated drinking water obtained from boreholes situated within a few feet of cattle dipping tanks. Severe drought followed

by heavy rains, presumably had caused cracks in the tanks, with leakage into the boreholes.—H. P.

BLAKEMORE, F., & McDougall, E. I. (1946.) Flock idiosyncrasy to carbon tetrachloride.—*Vet. Rec.* 58. 400. 551

A flock of 220 Suffolk ewes which had recently lambed and shown general unthriftiness were given 1 ml. carbon tetrachloride per head in capsule form because of suspicion of liver fluke disease. Next morning 19 ewes were found dead, and a further seven died during the day. Many others became ill, but eventually the remainder recovered. Symptoms included depression, inability to stand and coma before death. On P.M. examination there were fatty degeneration and necrosis of the liver with congestion of the abomasum. General unthriftiness of the flock was attributed to parasitic gastro-enteritis. Blood samples obtained from two sheep just prior to death had normal serum Ca levels, but there was an increase in guanidine-like substances in the blood determined by the method of Minot and Cutler (1929). The authors attribute the deaths entirely to the effects of  $CCl_4$  poisoning, the sheep showing a marked idiosyncrasy to the drug, and emphasize the importance of ascertaining the tolerance of flocks to  $CCl_4$  before adopting mass treatment even with doses as low as 1 ml.—A. E.

WOODARD, G., OFNER, R. R., & MONTGOMERY, C. M. (1945.) Accumulation of DDT in the body fat and its appearance in the milk of dogs.—*Science.* 102. 177-178. 552

D.D.T. was fed to dogs in powder form or dissolved in maize oil in doses ranging from 10-80 mg. per kg. body weight per day for periods of from 138-747 days. Results indicated that D.D.T. in toxic amounts was stored in the body

fat, that the storage increased with dosage level, that there was a greater accumulation in the fat after feeding oil solutions than after feeding undissolved material, that the D.D.T. gradually disappeared from the fat when administration was discontinued and that the milk of lactating animals receiving D.D.T. in amounts of 80 mg. per kg. per day and a single dose of 50 mg. per kg. respectively contained appreciable quantities (about 0.05 mg. per g. milk) of the drug. No deaths occurred in the group receiving 80 mg. per kg. per day in powder form whereas only two of a total of 16 animals survived after receiving 80 mg. per kg. per day dissolved in maize oil.

—J. LOCHIEL McGIRR.

GÜNTER, E. (1948.) Über Pflanzenvergiftung bei Weidetieren in Südwestafrika. [Plant poisoning of pastured animals in South-West Africa.] —*Dtsch. tierärztl. Wschr. / Tierärztl. Rdsch.* 51/49. 355-356, and 52/50. 39-40. 553

The conditions are described under which poisoning of livestock may occur in South-West

See also absts. 539 (carbon tetrachloride and lever cirrhosis); 614 (damaged grain).

## PHARMACOLOGY AND THERAPEUTICS

—. (1947.) Responsibility for drugs supplied.—*Brit. med. J.* March 29th. 428. 555

Reference is made to a recent High Court decision in a case where a firm of veterinary surgeons was sued by the owner for losses which followed the inoculation of their cattle with corynebacterium toxoid. The toxoid had been supplied by a firm of manufacturing chemists. The judge held that there was an implied contract that toxoid used by the veterinary surgeons should be reasonably fit for the purpose for which it was used, namely, to protect the cattle against summer mastitis.

It is pointed out that this decision makes a new law in that practitioners may be held liable for mistakes made by drug manufacturers. Further comment was withheld in view of the possibility of an appeal.—M. C.

MITCHELL, J. S. (1947.) Therapeutic possibilities of radio-phosphorus.—*Brit. med. J.* Feb. 15th. 250-251. 556

Although it is not yet possible finally to assess the therapeutic value of radio-phosphorus,  $P^{32}$ , it seems that except for the treatment of polycythaemia vera where it is the best therapeutic agent available, it is not superior to ordinary X-ray application. It is of no value in the treatment of acute leukaemia or Hodgkin's disease. Radio-phosphorus is used in the form of isotonic sodium phosphate solution containing 300 microcuries per ml. and administered intravenously in doses of

Africa from the consumption of poisonous plants. Most of the material is included in Steyn's "Toxicology of Plants in South Africa" and the article is mainly a compilation.—U. F. R.

RIDLEY, H. (1944.) Snake venom ophthalmia.—*Brit. J. Ophthal.* 28. 568-572. 554

A general discussion on the "spitting" by poisonous snakes, with details of a human being into one of whose eyes a black-necked cobra (*Naja nigricollis*) spat. It is stated that this snake "spits" with inerrant aim and the venom so ejected will forcibly hit a glass disc at a distance of five feet.

The venom is very irritant to the eye; it is not absorbed in quantities sufficient to produce systemic effect, but eyes so injured commonly have permanent opacities, sometimes resulting in blindness. R. does not deem the use of antivenin to be worth while, but advocates local treatment as for chemical ophthalmias.

It is stated that the eyes of dogs and rabbits are particularly sensitive to the venom.

0.5 to 2.0 millicuries, but great care is required to avoid serious damage to the bone marrow.

—J. A. NICHOLSON.

RAPIĆ, S. (1942.) Liječenje sa kratkim valovima. [Short-wave therapy.]—*Vet. Arhiv.* 12. 458-481. [Abst. from German summary.] 557

R. discusses the physical, biological and medical value of short-wave therapy and states that its action differs from diathermy. He describes the effects of short-wave therapy in infections of the skin, strangles, mastitis, fistulous withers and pneumonia and advocates its use for hospitals and animal clinics.—J. H.

\*MONOD, R., & CARA, M. (1945.) Est-il possible de faire l'examen fonctionel du poumon par des testes d'élimination des substances volatiles? Y a-t-il des troubles cliniques de la perméabilité pulmonaire? [Tests of pulmonary permeability by injection of volatile substances.]

—*Poumon.* 1. 257. [Abst. in *Amer. Rev. Tuberc.* 55. No. 6. p. 176 of absts. (1947), copied verbatim. Signed: V. LEITES.] 558

Pulmonary permeability was studied by injecting ethyl alcohol intravenously and determining the output in the expired air. A detailed description of the method and its causes of error is given. Clinical experiments did not permit to establish any correlation between the condition of the lung and the elimination of alcohol. Disturbances of pulmonary permeability are not considered to be clinically significant. What counts

in pulmonary permeability, is not so much the total surface of the lung but the relation between surface and alveolar volume. Most lung diseases did not modify this relation with the exception of generalized emphysema in which a slight reduction of the factor was found.

FREI, W. (1944.) Die Pathogenität der Bakterien als biochemisches Problem. [Bacterial pathogenicity as a biochemical problem.]—Schweiz. Arch. Tierheilk. 86. 171-187 & 224-236. 559

F. gives an account of the chemical aspects of pathogenicity, dealing with the properties and actions of bacterial toxins, enzymes, and non-specific metabolic products. The direct activities of bacteria may be accompanied and assisted by local changes of pH and redox-potential, and by the deviation of oxygen and nutrients from tissue cells. A closer study of the chemistry of bacterial toxins and enzymes will throw light not only on the mechanism of pathogenicity but also on the immune processes of antibody formation and phagocytosis.—E. COTCHIN.

MARSHAK, A. (1947.) A crystalline antibacterial substance from the lichen, *Ramalina reticulata*.—Publ. Hlth Rep., Wash. 62. 3-19. [Author's summary copied verbatim.] 560

A crystalline substance has been isolated from the lichen, *Ramalina reticulata*, with a melting point of 191-192°C. and an empirical formula of  $C_{16}H_{14}O_6$ . It can be administered subcutaneously in oil, daily, at a rate of 10-20 mg. per 350-400 gm. guinea pig for a period of 3 weeks without obvious toxic effects. When so administered to guinea pigs infected intraperitoneally with human tubercle bacilli of the strain H<sub>37</sub>RV, it appears to retard the progress of the disease.

LOVELL, R. (1947.) Penicillin.—Vet. Rec. 59. 365-367. 561

This article is a brief summary of present-day knowledge of penicillin, comprising the discovery of the drug, the development of methods of purification and manufacture, the stability, assay, and administration of the drug, and its present and potential uses in veterinary practice.—E. COTCHIN.

TOMPSETT, R., SHULTZ, S., & McDERMOTT, W. (1947.) The relation of protein binding to the pharmacology and antibacterial activity of penicillins X, G, dihydro F, and K.—J. Bact. 53. 581-595. [Authors' summary copied verbatim.] 562

It was observed that the antibacterial activities of four penicillins, X, G, dihydro F, and K, were antagonized *in vitro* by serum and by the albumin fraction of serum. The degrees of antagonism were quantitatively different for the individual penicillins. Among these four penicillins, the

degrees of reduction in antibacterial activity caused by serum and albumin were roughly in direct proportion to the degrees of binding to these substances as demonstrated by dialysis. Penicillin X, which was 47 per cent bound, lost 40 to 60 per cent of its activity in the presence of 30 per cent serum. Penicillin K, which was 91 per cent bound, lost 85 to 90 per cent of its activity when similarly tested.

There is an inverse relationship between the degree of binding of the individual penicillins to serum *in vitro* and the reported effectiveness of these penicillins in the treatment of infections in experimental animals.

MILLER, C. P., & BOOR, A. K. (1946.) Protection of mice against lethal action of gonococcal endotoxin by penicillin.—Proc. Soc. exp. Biol., N.Y. 61. 18-20. 563

Large doses of penicillin (total of 12,000 units per mouse) repeatedly administered by subcutaneous injection protected a significant proportion of mice against the lethal action of a crude preparation of gonococcal endotoxin (prepared from five strains of gonococcus grown in agar containing casein digest and cystine).—J. M. R.

JENNINGS, I. W. (1947.) The action of penicillin *in vitro* on various bacteria of animal origin.—Vet. Rec. 59. 369-370. 564

Using a penicillin-ditch blood-agar plate method, 48 separate strains of animal pathogens of wide variety isolated in routine diagnosis were tested for *in vitro* penicillin sensitivity, compared with the Oxford staphylococcus, and placed in four groups—highly, moderately, and slightly susceptible, and insusceptible. Different strains of staphylococcus, streptococcus, and *Corynebacterium pyogenes* of diverse origin fell into each of the first three groups. The highly susceptible group also included two strains of *Erysipelothrrix rhusiopathiae*, and one each of *Actinomyces bovis*, *Clostridium welchii* type B, and *Cl. chauvoei*. In the moderately susceptible group was a strain of *Bacillus anthracis*. Two strains of *Pasteurella septica* (one from a pig, and one from a case of pneumonia and pleurisy in a lion cub) grew across the ditch containing 1 unit per ml., but were inhibited by concentrations of 100 and 10 units per ml. In the non-susceptible group were strains of *Vibrio foetus*, *Brucella abortus*, *Salmonella pullorum* and *Bacterium coli*.

Although the results obtained *in vitro* do not necessarily apply to *in vivo* conditions, a simple routine test of the type, with material sent to a laboratory, described as a diagnostic measure might usefully indicate to the practitioner whether or not he has to deal with an organism sensitive to penicillin *in vitro*.—E. COTCHIN.

ARTHUR, G. H. (1947.) A preliminary note on the use of penicillin in the treatment of acute bovine mastitis in non-lactating animals.—*Vet. Rec.* 59. 286-287. 565

Ten quarters were treated in dry cows and heifers affected with acute mastitis during August and September, 1946. The Na or Ca salts of penicillin, dissolved in water, were infused into the quarters in doses of 1,000,000 units, repeated on from three to eight occasions at intervals of 8-24 hours. Six quarters which yielded *Corynebacterium pyogenes* on culture, alone or with other organisms, ceased to function. One only of two quarters infected by *Streptococcus dysgalactiae* showed bacteriological and clinical recovery. One quarter infected by *Str. agalactiae* recovered, as did one quarter which showed signs of clinical mastitis but gave a sterile secretion before and during treatment.

The results did not differ materially from those which might have occurred naturally, or after other treatment as, e.g., by sulphanilamide.

—E. COTCHIN.

JOHNSON, S. D., & FINCHER, M. G. (1946.) Penicillin therapy in mastitis.—*Cornell Vet.* 36. 188-158. 566

An account is given of field tests with penicillin in the treatment of mastitis in 316 quarters of 213 cows. The drug was used indiscriminately against all types of infection. When considered on a herd basis results were generally favourable, but in individual animals they were often disappointing. This was thought to be due to lack of knowledge of the optimum dose of the drug and to the many advanced cases of the disease treated. Best results followed doses of 25,000-100,000 units in 10-50 ml. of water repeated at least three times. No local or systemic reactions occurred in treated animals and in many cases milk yields improved immediately after treatment.

Advanced chronic mastitis cases generally did not respond favourably to treatment despite the use of large doses of the drug. Such cases were often temporarily freed from infection but usually continued to give abnormal milk or subsequently became re-infected. Quarters with distinct atrophy and producing only small quantities of milk frequently dried off following infusion.

Treatment of dry cows was generally more effective than those in full lactation, but again mild cases of infection responded much more favourably than advanced or severe cases.—D. D. OGILVIE.

I. MURNANE, D. (1946.) Clinical bovine mastitis, its treatment and control.—*Aust. vet. J.* 22. 156-168. 567

II. HINDMARSH, W. L. (1946.) Clinical bovine

mastitis and its treatment.—*Ibid.* 22. 168-171. Discussion pp. 171-172. 568

I. Stress is laid upon contributing and predisposing causes of mastitis and the role of hygiene in its control. It is considered that most cases of streptococcal mastitis commence as acute infections. Feeding of calves on infected milk from cows with streptococcal mastitis did not lead to their infection during their first lactation. Three doses of 25,000 Oxford units of penicillin dissolved in diltilled water, given as an infusion for one quarter at intervals of 24 hours, proved most efficient in the elimination of clinical *Streptococcus agalactiae* infection.

II. Earlier work in Australia on the use of acridines is described. Clinical improvement resulted from treatment with sulphanilamide in oil although *Str. agalactiae* was not eliminated in a high percentage of cases. Phemerol 1:5,000 proved efficient in a limited trial but produced marked alteration in the milk persisting for at least ten days.—D. F. STEWART.

OLIVIER, H. -R., & DE SAINT-RAT, L. (1946.) Action du bacille subtil et de l'endo-subtilysine sur le bacille de Koch (souche d'Arloing et Courmont) et dans la tuberculose expérimentale. [Action of *Bacillus subtilis* and its products on *Mycobact. tuberculosis*.]—*Rev. Tuberc. Paris.* 10. 50. Abst. in *Amer. Rev. Tuberc.* 55. No. 6. p. 170 of absts. (1947). [Copied verbatim. Signed: V. LEITES.] 569

Experiments demonstrate definite bacteriostatic and bacteriolytic properties of *Bacillus subtilis* and of "endosubtilysine" on cultures of tubercle bacilli. Subcutaneous administration of endosubtilysine in guinea pigs with experimental tuberculosis produced a retardation in the progression of lesions.

YOUNMANS, G. P., & KARLSON, A. G. (1947.) Streptomycin sensitivity of tubercle bacilli. Studies on recently isolated tubercle bacilli and the development of resistance to streptomycin *in vivo*.—*Amer. Rev. Tuberc.* 55. 529-535. [Spanish summary. Authors' conclusions copied verbatim.] 570

The majority of tubercle bacilli isolated from patients prior to treatment with streptomycin are sensitive *in vitro* to streptomycin in concentrations of less than 2 micrograms per ml. of medium. Ninety per cent of 181 strains studied were inhibited by the drug in concentration of 1.56 micrograms or less per ml. of a liquid medium which contained 10 per cent horse, beef or human plasma. Bovine strains of tubercle bacilli apparently exhibit the same order of sensitivity to streptomycin as those of the human type. Avian strains of tubercle bacilli are somewhat more

resistant to the action of streptomycin *in vitro* than are mammalian strains.

Cultures of tubercle bacilli isolated from patients after several months or more of treatment with streptomycin exhibit resistance to streptomycin *in vitro* several thousand times as great as that of cultures isolated prior to treatment.

The clinical significance of the resistance to streptomycin developed by tubercle bacilli is not definitely established.

GIROUX, M. (1944.) Traitement de la tuberculose expérimentale du cobaye par la "diasone" :

1. Primo-infection ; 2. Reinfestation. [Diasone in g. pig tuberculosis.]—*Laval méd.* 9. 788. [Abst. in *Amer. Rev. Tuberc.* 52. No. 8. P. 47 of absts. (1945), copied *verbatim*. Signed : G. C. LEINER.]

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The effect of diasone [a sulphonamide] was studied in guinea pigs with primary infection (group A) and guinea pigs with reinfection tuberculosis (group B). Group A consisted of 18 animals which were infected by intramuscular injection of 0.1 mg. of human tubercle bacilli. Six animals served as controls (group 1), 6 were treated from the moment of inoculation (group 2), in 6 the treatment was started two weeks after the inoculation (group 3). The treatment consisted in oral administration of 150 mg. diasone, twice daily. The animals were killed two weeks, one month, one and a half months, two months, three months and four months after the inoculation. The control animals (group 1) showed rapidly developing tuberculosis of all organs with caseation ; group 2 showed hardly any lesions in the organs, even four months after inoculation ; in group 3, liver and spleen were affected two weeks after inoculation, but then the disease did not progress. Group B consisted of 17 guinea pigs which received a subcutaneous injection of 1 mg. BCG. One month later all animals reacted in intracutaneous tuberculin tests. One month after the injection of BCG the animals received intratracheally 0.1 mg. of human tubercle bacilli. Six animals served as controls (group 1), in 6 the treatment was started two weeks before the intratracheal infection (group 2), and in 5 the treatment was started two weeks after the intratracheal infection (group 3). The treatment was the same as in the primary infection group, and the animals were killed in the same intervals. Group 2 showed slower development of tuberculosis in lungs and other organs than the control group 1 ; in group 3 the diasone did not affect the development of the pulmonary lesions, but appeared to retard the development of tuberculosis in other organs. The average level of diasone in the blood was 3.0 mg. per cent, in the urine 81.0 mg. per cent. The only toxic

effects were blood stasis in the spleen and hypertrophy of its reticuloendothelial tissue.

IKEJIANI, O., & MAUTNER, L. S. (1946.) Changes in the leucocyte picture in experimental trypanosomiasis by administration of neostibosan and neostam.—*J. Pharmacol.* 87. 343-349. 572

The authors discuss the literature relating to the response of the reticulo-endothelial system to protozoan infections, and to the effects of antimarial drugs on the blood and haematopoietic organs during trypanosomal infections. Most studies in the past have been concerned with the therapeutic effect of drugs. The authors investigated the effect on the blood of rats, experimentally infected with *T. equiperdum*, of the antimarial drugs neostibosan (metachlor-paracetylaminophenyl stibinate of sodium) and neostam (nitrogen glucoside of paraminophenyl stibinate of sodium).

Four groups of five rats each were used, the first consisted of normal rats, the second of rats infected with *T. equiperdum*, the third and fourth of rats infected with *T. equiperdum* and treated with neostibosan and neostam respectively. Details are given in four comparable graphs.

In normal rats, total and individual leucocyte counts showed variations, which were not statistically significant. In untreated infected rats, there was a decrease in the lymphocyte percentage, an increase in polymorphonuclear neutrophile percentage, and a decrease in monocyte percentage. Infected rats, treated with both drugs, showed similar blood pictures. Monocytes were increased, polymorphs decreased and lymphocytes increased.

It is suggested that increased numbers of monocytes play an adjunctive "scavenger" role by completing the destruction of trypanosomes, rendered vulnerable by the drugs.—J. G. B.

OLDHAM, F. K., KELSEY, F. E., CANTRELL, W., & GEILING, E. M. K. (1944.) Studies on antimarial drugs. The effect of malaria (*Plasmodium gallinaceum*) and of anemia on the distribution of quinine in the tissues of the fowl.—*J. Pharmacol.* 82. 349-356. 573

Using White Leghorn fowls, both adults and chickens, some infected with *Plasmodium gallinaceum* and some made anaemic by bleeding or by injection of phenylhydrazine, the distribution in the tissues of quinine after intravenous injection was studied.

The concentration of quinine in the spleen, plasma, red cells, bone marrow and liver was frequently higher in the infected birds than in controls. Relatively high concentrations in both plasma and red cells were found in most of the anaemic birds.—M. C.

DEARBORN, E. H., & MARSHALL, E. K., Jr. (1947.) The susceptibility of different species of avian

**malarial parasites to drugs.**—*Amer. J. Hyg.* 45. 25-28. **574**

The susceptibility to various drugs of four species of avian plasmodia namely *P. lophurae*, *P. cathemerium*, *P. relictum* and *P. circumflexum* has been studied.

Differences in susceptibility were found for each of the four species and the bearing of this information on the use of avian malaria for the "screening" of drugs of possible use in human malaria is discussed.—M. C.

**CLEMMESSEN, J., & ANDERSON, E. K. (1942.) The influence of "Mucin 1701 W" on infection with shope fibroma and vaccinia viruses.**—*Acta path. microbiol. scand.* 19. 173-183. [In English, authors' summary copied *verbatim*.] **575**

Suspension in mucin of fibroma virus exerts no demonstrable influence on the spread of virus following intradermal inoculation on young rabbits. The spread of fibroma virus following intraperitoneal inoculation is favoured by mucin. This applies also to the proliferative response to such inoculations. The local reaction to intradermal injection of fibroma virus and vaccinia is increased by mucin, and the minimal effective dose is reduced. Intravenous injection of mucin reduces the minimal effective dose of fibroma or vaccinia virus, intradermally injected.

**SEELER, A. O., GRAESSLE, O., & OTT, W. H. (1946.) Effect of quinine on influenza virus infections in mice.**—*J. infect. Dis.* 79. 156-158. **576**

In mice 0.3% or less of quinine sulphate fed in the diet had a slight but consistent retarding effect on the course of infection with the PR 8 strain of *influenza A* virus. Quinidine, an isomer of quinine, and totaquina, a mixture of the cinchona alkaloids, gave similar results.

—E. COTCHIN.

**BISHOP, F. C. (1946.) The insecticide situation.**—*J. econ. Ent.* 39. 449-459. **577**

The first part of this paper gives a general account of the way in which the shortage of supplies of important insecticidal materials was overcome by substitutes in the U.S.A. during the war.

The second part of the paper gives an excellent summary of new insecticide developments, chiefly in their application to the control of plant pests. In the field of veterinary insecticides sabadilla sprays and dusts are stated to have an irritating effect on operators and to be highly poisonous to higher animals. Gammexane has been found to be 7-11 times more toxic to houseflies and slightly less toxic to adult malaria mosquitoes than D.D.T. In laboratory tests on nearly full-grown housefly larvae gammexane was 11 times more toxic than D.D.T.

There is still much to be learned about the uses of D.D.T., and also the secondary effects of D.D.T. applications. These include its effects on bees and other beneficial forms of life such as fish and birds; on livestock when fed on forage, ensilage or grain that carry D.D.T.; on poultry fed on insects killed by D.D.T. and on man when vegetables and fruits treated with D.D.T. are eaten regularly.

Of the other new insecticides the most promising in the veterinary field appears to be chlorophenylchloromethylsulphone. This is a German product and it is stated to be highly toxic to lice, to persist over a long period and that solutions containing 0.1% prevent the hatching of lice eggs.—W. MOORE.

**DUNN, J. E., DUNN, R. C., & SMITH, B. S. (1947.) Skin-sensitizing properties of DDT for the guinea pig.**—*Publ. Hlth Rep., Wash.* 61. 1614-1620. [Authors' summary copied *verbatim*.] **578**

An attempt to induce cutaneous hypersensitivity to DDT in guinea pigs, using several methods, was unsuccessful. A possible explanation is presented for the previously reported induction of cutaneous hypersensitivity to DDT in the guinea pig. Histopathologic changes in the skin following injection of DDT in corn oil and of corn oil alone are described.

**CLAPP, J. M., FAY, R. W., & SIMMONS, S. W. (1947.) The comparative residual toxicity of DDT to *Anopheles quadrimaculatus* when applied on different surfaces.**—*Publ. Hlth Rep., Wash.* 62. 158-170. [Authors' summary and conclusions copied *verbatim*.] **579**

It has been ascertained that the relationships between various types of household wall surfaces and the residual toxicity of DDT deposits are important factors in the practical use of DDT sprays.

The type of surface influences the residual toxicity of DDT sprays applied at equal rates. DDT on rough wood, fabrics, well-dried paints, and rubbing varnish gives the best residual effect. DDT spray applications on linoleum, fresh paints, spar varnish, or on simulated adobe are not effective against *A. quadrimaculatus* under test conditions. Under the conditions described, even applications of 600 mg. DDT per square foot are ineffective on adobe.

DDT sprays do not damage plastic screen or fabrics which are composed of plant or animal fibers. If applied too heavily, they cause some clouding of high-gloss enamels and some staining of wallpaper. DDT sprays, with either kerosene or Velsicol AR-50 as solvents, produce less deleterious effects on dark-gloss enamels than do the DDT-xylene emulsions.

The nature of the surface definitely affects the final distribution of the DDT deposits. Fabrics, wallpaper, and rough wood tend to hold the crystals on the surface, whereas plain, smooth wood is penetrated by the spray and a considerable portion of the spray deposit remains beneath the surface. Linoleum, fresh paints, and varnishes are readily penetrated by the solvents, and some of the DDT crystals are thereby permanently or temporarily occluded. The incorporation of salt into whitewash produces more effective DDT residual deposits on the outer surface of the whitewash. Grease or smoke depositions on surfaces previously treated with DDT decrease the efficiency of the residues.

**UPHOLT, W. M. (1947.) The inactivation of DDT used in anopheline mosquito larvicides.**

—*Publ. Hlth Rep., Wash.* 62. 302-309.  
[Author's summary copied *verbatim*.] 580

Several factors may contribute to the relatively rapid loss of effectiveness of DDT applied in safe dosages for the control of anopheline mosquito larvae. Of these, the two most important appear to be redistribution of the DDT due to wind and wave action, and precipitation of suspended DDT and adsorption of DDT by some part of the bottom-mud complex. Adsorption is relatively slow on mud and appears to be on the organic components of the mud only, sandy soils with a minimum of organic material being rather poor adsorbents. It has been suggested that the use of competitive adsorbents might be of value, if it were possible to find a nontoxic substance that could be mixed with the DDT and applied with it, being adsorbed more readily than the DDT and thus preventing the adsorption of the DDT itself.

**FERGUSON, F. F., ARNOLD, E. H., & UPHOLT, W. M. (1947.) Control of anopheline mosquito larvae by use of DDT-oil mists.**—*Publ. Hlth Rep., Wash.* 62. 296-302. [Authors' summary copied *verbatim*.] 581

Dispersions of mist sprays of DDT-fuel-oil solutions have been shown to be a practical adaptation of this insecticide to the control of *Anopheles quadrimaculatus* larvae. Since the material is equally effective against all larval instars, an extension of the larvicide interval from 2 to 3 days may be expected over that in use with paris-green dusts. For routine treatments throughout the season, treatment applications of no more than 0.05 pound DDT per acre are recommended where fish life is of importance. Mist-spray DDT-oil larvicides may be distributed by means of light-weight air-pressure sprayers. This results in less labor fatigue, and in the more effective use of manpower. On the basis of current prices, savings in material costs as well as labor

can be anticipated by the substitution of DDT-oil mist sprays for other types of larvicides.

**KNOWLES, F. L., & SMITH, C. S. (1946.) Duration of toxicity of several DDT residual sprays under conditions of malaria-control operations.**—*Publ. Hlth Rep., Wash.* 61. 1806-1810.  
[Authors' summary copied *verbatim*.] 582

To determine the duration of toxicity for mosquitoes of several DDT residual sprays, 72 houses were sprayed with 4 formulas of DDT spray at the beginning of the "malaria season", on about June 1, and were inspected at 6 different periods until October 1, 1945. Twenty-five unsprayed houses in the same area were inspected at the same time.

For the period of the "malaria season", in this region a period of 17 weeks, the once-sprayed houses harbored significantly fewer mosquitoes than the unsprayed houses.

Little difference was found in the duration of toxicity of the four formulas of DDT residual spray employed, except for the formula used in the houses in group C, which was statistically less effective 14 weeks after spraying.

**BAKER, W. C., SCUDDER, H. I., & GUY, E. L. (1947.) The control of houseflies by DDT sprays.**—*Publ. Hlth Rep., Wash.* 62. 597-612.  
[Authors' summary copied *verbatim*.] 583

D.D.T. has proved to be very effective in the control of houseflies when employed not only for a residual-spray treatment in dairies and restaurants, but also on D.D.T.-impregnated strings hung in small food shops, and in a dilute cover spray, used to kill emerging adult flies at an alley garbage station and an industrial plant.

In dairies, a 2½-percent-DDT-xylene-Triton emulsion was used at the rate of 200 mg. of DDT per square foot. Under poor sanitary conditions, treatment of the milking barn alone or of the outbuildings alone gave 50 to 70 percent control, which was not sufficient to reduce the population to a satisfactory level. A complete treatment of both barn and outbuildings usually gave satisfactory control for 3 months or more. A DDT emulsion and a water-wettable DDT-powder suspension gave comparable results when used under similar conditions and concentrations.

In restaurants, a 7½-percent emulsion was applied to the ceiling and walls of dining rooms and kitchens at the rate of 200 mg. of DDT per square foot. On high-gloss finishes, particular caution was exercised to obtain a uniformity of spray pattern and to prevent coalescing of the droplets. Excellent control was obtained for three or more months in the restaurants treated.

In small food and ice-cream shops, 40 to 60 feet of DDT-impregnated cord was hung as a

replacement for electric-light pull cords, along the chains of suspended display shelves, and from ceilings at locations where the cord would be accessible to the flies, gave good control when fly populations were not excessive. In shops with a great influx of flies, the treated strings did not bring the flies under satisfactory control.

Preliminary tests with DDT as a cover spray for the control of adult flies emerging from garbage can and grain wastes gave effective control. A treatment of an alley near a restaurant garbage station with a one-half-percent-DDT emulsion at the rate of 200 mg. per square foot gave effective control for 3 weeks. A treatment of grain wastes with one-half-percent emulsion at the rate of 300 mg. per square foot gave effective control for 5-week intervals. When a 2½-percent-DDT emulsion was applied as a residual treatment to surfaces at the rate of 200 mg. per square foot to supplement the cover spray, a more rapid decrease in population and a longer period of effectiveness was obtained.

BAKER, W. C., & SCHWARTZ, L. G. (1947.) Preliminary studies on the control of blowflies with DDT.—*Publ. Hlth Rep., Wash.* 62. 800-807. [Authors' summary copied *verbatim*.] 584

Preliminary tests were made with DDT for the control of blowflies at a fish market, an abattoir, a hide-processing plant, and a seafood plant, using a 5-percent DDT-xylene-Triton X-100 emulsion applied at a rate of 200 and 300 mg. DDT per square foot. The variation in the degree of control achieved was dependent to a large extent on the relationship between the night resting places of the flies and the extent to which such places were treated. At establishments where only the area about the daytime feeding places of the blowflies was treated, control was obtained for a 2- to 3-week period. At establishments where the night resting places were treated in addition to the area around the daytime feeding places, effective control of the blowflies was obtained for periods up to 3 months.

LUDWIG, R. G., & NICHOLSON, H. P. (1947.) The control of rat ectoparasites with DDT.—*Publ. Hlth Rep., Wash.* 62. 77-84. [Authors' summary copied *verbatim*.] 585

Field studies were initiated to determine the degree of control effected against rat ectoparasites by treating rat-infested premises with 10-percent DDT dust. Eleven study premises were trapped before treatment, 1 week following treatment, and at approximately monthly intervals thereafter. From rats trapped in untreated premises, only the oriental rat flea, *X. cheopis*, was found in sufficient numbers and uniformity of distribution to permit an analysis of normal seasonal populations.

Treatment was effected by blowing the 10-percent DDT dust into burrows and enclosed harborages with a cyanogas foot-pump duster and by sifting a light layer of dust along rat runways with hand-shaker dusters.

Spectacular and consistent control of *X. cheopis* resulted in all 11 establishments, with the control percentage dropping off from an initial 99.3 percent at the rate of approximately 5 percent per month for the 4 months following treatment.

A degree of control was achieved against rat mites and rat lice, but data were insufficient to justify the statement of a definite percentage.

\*SCHMIDT, H. W. (1943.) Versuche, das Wachstum des Ascitescarcinoms der Maus durch Porphyrine zu beeinflussen. [Attempts to affect mouse ascites carcinoma by phorphyrins.] —*Z. Krebsforsch.* 53. 812-818. [Abst. in *Cancer Res.* 5. 125-126. (1945), copied *verbatim*. Signed: M. H. P.] 586

Neither protoporphyrin nor hematoporphyrin exerted a therapeutic effect on ascites carcinoma of the mouse, when these compounds were given intraperitoneally or subcutaneously in single doses of 0.25 to 0.5 mgm., starting at implantation of the tumors and repeated every 2 days. The results were not improved by simultaneous ultraviolet irradiation.

WHITE, A. (1946.) Preparation and chemistry of anterior pituitary hormones.—*Physiol. Rev.* 26. 574-608. 587

At least six hormones have been demonstrated in the anterior pituitary, although there is some biological over-lapping in their action. They are proteins and four of them, *viz.*, the lactogenic, adrenotropic, growth and luteinizing hormones are said to have been isolated in a homogeneous and highly purified state, as judged by the application of the electrophoretic, ultracentrifugal and solubility techniques, although other criteria may reveal impurities not detectable by physico-chemical methods. The thyrotropic hormone has been isolated in highly purified form, but has not yet been examined by rigid criteria of protein purity. The biological activity of the hormones seems to be intimately related to the protein nature of the active principle, and procedures which alter even slightly the protein structure result in loss of physiological activity. The adrenotropic hormone is exceptional, since a number of its peptide linkages have been cleaved by pepsin with retention of biological activity. The effects produced by the anterior pituitary hormones cannot, as yet, be attributed to any specific "hapten" portion of the molecule, as efforts to detect non-amino acid groups, or active groupings of amino-acids, to which hormonal function could be assigned

have been unsuccessful. Several of the hormones contain carbohydrate in their structure. Physical and chemical differences exist among anterior pituitary hormones isolated from different species, e.g., between the luteinizing hormone preparations. *See also absts. 480 (coccidiosis); 483 (theileriasis); 551 (carbon tetrachloride); 552 (DDT).*

## PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

VARIČAK, T. (1941.) O nekim opažanjima na epidermi domaćih životinja. [Observations concerning the epidermis in domestic animals.] —*Vet. Arhiv.* 11. 189-200. [Abst. from German summary.] 588

Factors influencing epidermis structure are discussed.

After surveying the literature on the structure of the different epidermal layers, V. describes his own results obtained with stains recommended by Markinotti and with the polarizing microscope. The epidermal layers of the skin of the hen and of the horse, cow, pig, dog and cat were compared with those of man. Selective staining of individual layers depends on structure, or thickness which is influenced by external and internal factors. It was found that the stratum corneum of the cow, pig and horse stained in the same way as the stratum lucidum of the human epidermis. With the polarizing microscope double refraction is characteristic. Keratin from Martinotti's tests was little in evidence or absent in mammals and fowls. The epidermis of dogs and cats resembles that of man, but the superficial translucent layer (Petersen) seldom occurs. The lower stratum lucidum, contrary to statements in the literature, is generally present.—K. J. SINCLAIR.

STROMINGER, J. L. (1947.) The relation between water intake and food intake in normal rats and in rats with hypothalamic hyperphagia.—*Yale J. Biol. Med.* 19. 278-288. [Author's summary copied *verbatim*.] 589

The water intake of normal rats and of obese rats with the lesions of hypothalamic hyperphagia is quantitatively related to the food they eat. Under the favorable conditions of this experiment the average daily water intake (ml.) was approximately 200 per cent of the average daily food intake (gm.). Since this quantitative relation was not disturbed in the obese rats, the polydipsia of these animals is attributed entirely to their large food intake.

In normal animals restriction of water intake produced depression of food intake and restriction of food intake produced depression of water intake, thus approximately maintaining the water : food ratio, although animals receiving no food drank some water and animals with no water ate some food.

obtained from sheep and hog pituitary tissue. On the other hand, the purified hog and sheep adrenotropins, isolated by two widely different procedures, appear to be identical in every property which has been examined.—J. M. R.

These results suggest the existence of a physiological regulation by which water intake is quantitatively related to food intake.

TULASNE, R. (1947.) Sur la mise en évidence du noyau des cellules bactériennes. [Attempts to prove the existence of a nucleus in bacterial cells.] —*C. R. Soc. Biol. Paris.* 141. 411-413. 590

T. studied *Bact. coli* by means of Robinow's hydrochloric acid-Giemsa-method. He points out that the application of the hydrochloric acid extracts the ribonucleic acids from the cytoplasm, leaving the more resistant desoxyribonucleic acids intact in the cells. In consequence the chromatinic structures are deeply, and the cytoplasm delicately stained when the Giemsa stain is applied to the acid treated organisms. T. fully confirms the results of Robinow and other workers who have demonstrated without doubt the existence of chromatinic structures in bacteria.

—E. KLIENEBERGER-NOBEL.

CAMERON, G. R. (1946.) Sudden shifts of body fluids.—*Proc. R. Soc. Med.* 40. 1-6. 591

The problem of the redistribution of body fluids resulting from some injury to the tissues is discussed from the viewpoint of chemical warfare. A blister formed by the action of a highly irritant liquid such as lewisite or mustard gas is characterized by the localized outpouring of blood plasma from the vessels of the affected part and resultant detachment of the epidermis. The work of PETERS and others indicates that proteolytic enzymes liberated after skin damage may be responsible for the loosening of the epidermis. Accompanying these phenomena there is a regular decline in plasma volume, sometimes to low levels, because fluid is removed and appears as oedema fluid in the injured areas.

Although the total blood volume decreases, there is little alteration in the blood cell mass, but the plasma proteins are reduced, since they are transferred to the oedema fluid in the regions affected by the irritant.

Phosgene, which exerts its effects only after inhalation, induces similar effects in the tissues with which it comes in contact. Fluid rich in plasma proteins pours into the air spaces of the lungs, causing pulmonary oedema, which may result in death from respiratory failure. Changes

in the blood pattern parallel those observed after the application of lewisite or mustard gas to the skin.

Thermal burns produce a similar set of disturbances, which, if the burns are extensive, develop with great rapidity.

Redistribution of body fluids follows on acute anhydramia, no matter how it is induced. Compensatory mechanisms are brought into play by the organism when the crisis becomes acute, the most important of these being the mobilization of fluid and protein from all available reservoirs in the body for the purpose of restoring the reduced plasma volume. Further investigation of the factors causing alteration in capillary permeability as the result of injury to the tissues is urgently required.

—E. M. CRUICKSHANK.

PETERS, I. I., & TROUT, G. M. (1945.) The influence of pH on the attraction between the fat globules and leucocytes of milk.—*J. Dairy Sci.* 28. 283-289. 592

Cream from separated pasteurized milk was washed thoroughly with physiological salt solution, whilst the skim milk was treated with rennet and heated to obtain clear whey. The washed cream was then mixed with the heat treated whey, washed leucocytes were added and the pH values lowered progressively by the careful addition of acid. The effect of change of pH was to alter considerably the attraction between the fat and the leucocytes. At pH 4.8, the iso-electric point of the fat globules, the migration of the leucocytes with the rising fat globules was greatest. At pH values below this point the attraction between the fat globules and the leucocytes was not so great as when the pH values exceeded 4.8, implying that when the electric charge of the fat globules was changed from negative to positive the washed leucocytes did not respond so readily to the sweeping action of the fat. The results are taken to suggest that the attraction between fat globules and leucocytes in milk is based upon opposite electric charges, thus allowing for the rising or settling of the leucocytes with respect to the fat.

—A. EDEN.

ØRSKOV, J. (1944.) New experiences on blood platelet genesis.—*Acta. path. microbiol. scand. Suppl.* No. 54. pp. 14-24. [In English.] 593

Study of the blood of lead intoxicated rabbits has further confirmed Ø.'s opinion that the genesis of blood platelets may well be from the extruded nuclei of developing erythrocytes.—L. M. M.

ESSERT, Z. (1944.) Prilog poznavanju kvantitativne i kvalitativne krvne slike hladnokrvnjaka. [The blood picture of the heavy horse.]—*Vet. Arhiv.* 14. 182-203. [Abst. from German summary.] 594

The blood picture of 40 Belgian cross-bred horses (20 geldings and 20 mares) aged 7-16 years was examined. The animals were healthy war department horses kept at 121 m. altitude. Jugular venous blood was sampled every second day at 9-10 o'clock, or 4-5 hours after the first feed.

The erythrocyte count of blood of all 40 horses varied from 5.400-7.230 million per c. mm., with an average of  $6.340 \pm 0.071$  million. There was no significant difference in erythrocyte count between geldings and mares or between different age groups (under 10 and over 10 years). Leucocyte values varied from 5.860-10.020 thousand, with an average of  $7.393 \pm 0.136$  thousand, and these were not influenced by age or sex. There was a significant positive correlation between erythrocyte counts and leucocyte counts. Qualitative data obtained with the Arneth/Schilling haemogram are recorded. No differences in average counts of the different types of leucocytes were found between the sexes.—K. J. SINCLAIR.

SMITH, E. L. (1946.) The immune proteins of bovine colostrum and plasma.—*J. biol. Chem.* 164. 345-358. 595

By means of electrophoretic analysis and isolation, the predominant protein in bovine colostrum was found to be the immune lactoglobulin which was isolated in electrophoretically homogeneous form. As with immune horse plasma the immune activity of bovine plasma was present in both T and  $\gamma$  components, both of which were isolated and characterized in comparison with the colostrum globulin by their elementary composition, iso-electric points and diffusion constants. Both the colostrum immune globulin and the plasma  $\gamma$ -globulin were found to be quantitatively equivalent in producing anaphylaxis in g. pigs.

The relationships of the various immune proteins are discussed, and colostrum globulin was found to be closely related to but not identical with the T- and  $\gamma$ -globulins. The immune lactoglobulin of colostrum was shown to be easily distinguished from  $\beta$ -lactoglobulin. S. emphasizes that on the basis of the present work the older conception of a lactoglobulin fraction in colostrum is not justified and that the old style "lactalbumin" is not primarily an albumin at all but a mixture of a wide variety of proteins in small amounts in addition to  $\beta$ -lactoglobulin (isolated by nine-tenths saturation with ammonium sulphate).—A. EDEN.

PAL, A. K., MOMIN, S. A., & MULLICK, D. N. (1945.) Studies on the composition of the blood of farm animals in India. II. Seasonal variations in the blood of dairy cattle.—*Indian J. vet.*

Sci. 15. 119-122. [For part I, see V.B. 15. 21.] 596

Morphological and chemical studies were made of whole blood and of serum from a group of normal Hariana cows during a 12 month period. The average values of haemoglobin, cell-volume, iron, calcium and magnesium exhibited significant variation in individual animals and also seasonal variations, haemoglobin and cell-volume being highest in winter, whereas serum constituents, calcium in particular, were highest in summer.

—N. B. DAS.

JØRGENSEN, G. (1944.) Studies on the effect of parathyroid injections on nephrectomized rabbits.—*Acta path. microbiol. scand.* 21. 890-895. [In English.] 597

Parathyroid injections in nephrectomized rabbits caused a considerable rise in serum P and a smaller increase in serum Ca. The findings are taken to indicate that the parathyroid is able to induce hyperphosphataemia and hypercalcaemia directly, and does not act indirectly, as has been suggested, by causing an initial lowering of the renal threshold for inorganic phosphate with a consequent decrease in blood P and a rise in blood Ca.—E. COTCHIN.

WICKWARE, A. B. (1947.) The differential blood picture in chickens before and after administration of embryonated eggs of *Heterakis gallinae* with notes on pathogenicity.—*Canad. J. comp. Med.* 11. 78-83. [French summary.] 598

Differential counts on the blood of test chickens and controls showed a highly significant increase in the heterophiles and eosinophiles, indicating that, in this infection, direct tissue or indirect tonic irritation is sufficient to stimulate granulocytopoiesis to an appreciable degree. A non-significant negative correlation was found between the number of worms and the number of cells recorded in each instance. Varying numbers of large and small nodules constituting nodular typhlitis occurred in nearly all the chickens of the control group as well as those of the infected group, so that this condition is not pathognomonic of *H. gallinae* infection. No effect on the host was observed using weight gains as a yardstick.

—R. GWATKIN.

CALHOUN, L. (1946.) Bone marrow of horses and cattle.—*Science*. 104. 423. 599

A technique is described for extracting bone marrow from horses and cattle for cytological examination. After the usual surgical preparation, a hole was drilled into the marrow cavity of a rib, and 1 ml. or less of marrow was aspirated by means of an airtight syringe and attached needle introduced into the drill hole.

In this preliminary report of findings, a table

is given of the range and mean cell count of bone marrow samples from seven horses and 14 cattle.

—C. W. OTTAWAY.

WARNOCK, G. M., & DUCKWORTH, J. (1944.) Changes in the skeleton during gestation and lactation in the rat.—*Biochem. J.* 38. 220-224. 600

The changes occurring during pregnancy and lactation in the bones of well-fed rats are described. Using a technique enabling the ends and shafts of the bones to be studied separately, it is seen that the changes are confined to the bone ends. Pregnancy causes little change, but lactation is associated with resorption of the spongiosa and demineralization of the unresorbed residue. It is suggested that a similar technique could be of use in the determination of the Ca and P requirements of the domestic animals, particularly in the case of the dairy cow, where P deficiency has a more marked effect on the skeleton than Ca deficiency.

—MARY C. LOBBAN.

HAMBURGER, C. (1944.) Comparison of the genitals, especially the prostate, in adult Rhesus monkeys—normal, castrated, and estrin-treated.—*Acta path. microbiol. scand. Suppl.* No. 54. 209-240. [In English. Author's summary copied *verbatim*.] 601

The experiment comprises three adult male rhesus monkeys: one normal, one castrate, and one estrin-treated. An account is given of the anatomical changes in the genitals, especially the prostate, and of some hormonal analyses on the blood and urine.

The *castrate* was killed one year after its castration, and autopsy showed: marked atrophy of the seminal vesicles and prostate, which presented an infantile proportion between the area of glandular tissue and the area of connective tissue round the uterus masculinus. The *estrin-treated monkey* was given daily injections of *estradiol monobenzoate* for one year, a total dose of 78 mg. In spite of its good appetite, the animal emaciated markedly. The autopsy findings were: pronounced testicular atrophy with complete cessation of spermiogenesis, atrophy of the glandular tissue in the epididymis, seminal vesicles and prostate besides, in a lesser degree, of Cowper's glands. The fibromuscular tissue in the organs mentioned had undergone a particularly vigorous development. Epithelial stratification and metaplasia (cornification) of the mucosa were found in the urethra, uterus masculinus and collecting ducts of the prostate, but not in the ejaculatory ducts. On the whole, the prostate was not enlarged. The skin of the anoscrotal region, the trunk and brow presented the characteristic estrogenic changes. The anterior pituitary lobe showed an increase in the number of eosinophilic cells.

The relation of the experimental findings to the theory about the etiology of the benign hypertrophy of the prostate is discussed, chiefly on the basis of Zuckerman's comprehensive experiments and endocrino-embryological explanations.

The hormonal analyses showed, among other things, that the castration gave no measurable increase in the gonadotrophin content of the blood and urine, and that the androgen excretion was strikingly low in all three monkeys.

TEUNISSEN, G. H. B. (1945.) Steriliteit bij de merrie. [Sterility in mares.]—*Tijdschr. Diergeneesk.* 70. 42-65. 602

T. describes his experiences in the treatment of infertility in mares, with special reference to a single mare which was finally brought to conception after two to three years failure, the method of treatment being irrigation of the uterus two days after service with 70 ml. of Lugol's iodine. The results of the treatment are attributed to the overcoming of endometritis at the correct time for the implantation of the fertilized ovum.—J. E.

RICHARDS, P. H. (1946.) Observations on the reproduction of Zebu cattle in Southern Nigerian dairies.—*Trop. Agriculture, Trin.* 23. 103-108. 603

During the war it was impossible to supply from tins, as formerly, all the milk required in Southern Nigeria. The experiment was tried therefore in Lagos and Ibadan of keeping dairy herds confined entirely to tsetse-proof cowsheds, except for an hour's exercise at dawn. Generally speaking this proved entirely successful, as the cows put on weight and milk yields were well maintained. However reproductive efficiency was much reduced; the "service period" between calving and conception averaging 160 days for 36 cows as compared with 80 days, the usual average for the same breed under natural conditions in the Northern Provinces. From 88 days *post-partum*, ovaries were "read" weekly *per rectum* in those cows which had not come on heat, a total of 36 for the nine-month period of observations. About 65% proved to be affected with suboestrus ("silent heat"), as a normal ovarian cycle was present. Most of the remainder exhibited true "dead" anoestrus. Ten suboestrus cases were treated by enucleation of the corpus luteum. The results were rather disappointing, as only two cases showed visible heat as of first instance. In others, the cycle was reset, but only another suboestrus ovulation resulted from the manipulation. However these animals showed visible heat when they were next due. In two cases enucleation arrested the cycle for a lengthy period. Eight cases of true anoestrus were treated with 10-15 mg. stilboestrol; results were considered good as most

conceived to the second oestrus; the drug appears successfully to have reinitiated the cycle. [Dosage route is not stated.] Three anoestrus cases received 1,000 i.u. pregnant mare's serum. In two cows this had no effect, while in the third a single silent ovulation resulted, but no continued cycle.

R. believes that future efforts should be concentrated on the extension of stilboestrol treatment to suboestrus cases, and on the detection of ovulation time in such cases, so that they can be inseminated or forced-served. He considers his poor results with P.M.S. may have been due to inadequate dosage. [The abstractor's experience very strongly confirms this; possibly an inappropriate administration route may also have been chosen. More recent work also suggests that R.'s "unduly large" stilboestrol dose is also sub-optimal.]—F. L. M. DAWSON.

KOVÁCS, J. (1944.) Ueber die Entwicklung der gelben Körper. [The development of corpora lutea.]—*Arch. wiss. prakt. Tierheilk.* 79. 299-308. 604

The epithelioid cells of the theca interna are derived, along with the interstitial cells of the ovarian stroma, from invading columns of germinal epithelium. During maturation of the follicle in the bitch, the membrana granulosa becomes folded and partly separated from the basement membrane. The epithelioid cells of the theca interna proliferate, and in this stage, which is designated "organization of the theca interna", blood vessels proliferate and run inwards from the vessels at the junction of theca interna and externa towards the basement membrane. When the follicle ruptures, the granulosa cells are mainly lost, and the others atrophy, and play no part in the formation of the corpus luteum. The theca interna is now released from pressure, and proliferating epithelioid cells, connective tissue cells and blood vessels fill the cavity, the basement membrane remaining intact in front of the advancing luteal tissue.

The luteal cells are thus derived entirely from the epithelioid cells of the theca interna, and the stroma of the corpus luteum from the theca interna and theca externa.—E. COTCHIN.

GODFREY, G. F. (1947.) The relationship of egg shell color to hatchability in some brown egg laying breeds.—*Poult. Sci.* 26. 381-388. 605

Four different breeds of brown egg laying fowls were used in experiments to determine whether intensity of brown colour of the eggs was correlated with hatchability. The eggs were classified as light coloured, medium coloured and dark coloured; in all 64,007 eggs were used. Light coloured eggs hatched poorly as compared with

medium or dark ones. It is concluded that egg shell colour is associated with many variable characteristics affecting hatchability.—M. C.

PIERRE, M. (1942.) Endocrinologie testiculaire. [The role of the testicle in the endocrine system.]—*Rev. Méd. vét., Lyon et Toulouse.* 93. 241-264. 606

This is a discussion on the historical evidence for testicular endocrine activity, and consideration of its controlling factors; the part played by the adrenal gland is rather inadequately dealt with. The syndrome and treatment in various pathological conditions affecting testicular endocrine function are also described.—A. CARLYLE.

PIERRE, M. (1945.) Endocrinologie hypophysaire. [Pituitary endocrinology.]—*Rev. Méd. vét., Lyon et Toulouse.* 96. 157-169. 607

The main functional interrelations of the pituitary and the other endocrine organs are discussed emphasizing their complexity with special reference to the gonads, and the central nervous system. The principles underlying the therapeutic use of pituitary extracts, and their application are briefly stated.—A. CARLYLE.

MIXNER, J. P., & UPP, C. W. (1947.) Increased rate of thyroxine secretion by hybrid chicks as a factor in heterosis.—*Poult. Sci.* 26. 389-395. 608

The practice of crossing inbred strains of poultry, exemplified by the Hy-Line "breed" developed by Wallace in Iowa, makes use of the phenomenon of hybrid vigour to increase production. In an effort to determine the physiological mechanism which operates to produce hybrid vigour the authors studied the thyroxine secretion rate of the thyroid gland of chicks of the Wallace Hy-Line strains representing two intra-breed crosses and one interbreed cross derived from four different inbred lines. The thyroxine secretion rates of the "double cross" chicks was much higher than those of "single cross" chicks. It is suggested that the increased thyroxine secretion may be a factor contributing to hybrid vigour.—M. C.

HALL, K. (1947.) The effects of pregnancy and relaxin on the histology of the pubic symphysis in the mouse.—*J. Endocrinol.* 5. 174-182. 609

In the virgin mouse the articular surfaces of the pubic bones are covered with cartilage and enclose a cleft-like joint cavity. The periosteum is continued dorsally and ventrally over the symphysis. The first indication of pelvic relaxation is proliferation of the articular cartilages which occurs at the 12th day of pregnancy. By the 15th day the interpubic gap is 1 mm. wide and is filled by a ligament composed of chondroid

See also abst. 637 textbook of physiological chemistry).

and cartilaginous tissue. During the last five days of pregnancy large numbers of osteoclasts cause resorption of the articular tips and adjacent portions of the bone. Active fibroblasts appear in the regions of resorbed bone and by the formation of new cartilage contribute to the lengthening of the ligament. The cartilage reverts to collagenous connective tissue with laterally orientated fibres. At parturition the interpubic gap is about 5.5 mm. wide. The ligament is almost entirely composed of collagenous tissue, and bone resorption has proceeded to the extent of exposing some of the medullary cavities. After parturition the gap begins to close, and by the fourth day the ligament has shrunk to half its length. Rapid osteogenesis replaces the symphysial plates, the ligament becomes more cartilaginous and by the second week *post partum* is reduced to a band of avascular fibro-cartilage 2 mm. long. It remains in this condition until the next pregnancy.

250 µg. oestrone administered over a period of ten days produced no histological changes in the symphysis pubis of the ovariectomized mouse, but when relaxin extract was given along with oestrone histological changes identical with those observed in normal pregnancy were produced.

—A. T. COWIE.

RAKOŠ, R. (1948.) Sinusi glave konja u rentgenskoj slici. [The X-ray examination of the nasal sinuses of the horse.]—*Vet. Arhiv.* 14. 110-136. [Abst. from German summary.] 610

X-ray examination in frontal and dorsal projection of the four nasal sinuses in healthy horses is described. The boundaries of the sinuses, their communication with other cavities and their internal structure are described.

The frontal sinus is clearly visible in frontal projection.

The dorso-oral and ventro-aboral region of the maxillary sinus is better defined in frontal projection and its lateral region in sagittal projection because of the deep shadow of the canine tooth.—K. J. SINCLAIR.

ELIAS, H. (1947.) Submucosal glands in the bovine ileum.—*Amer. J. vet. Res.* 8. 52-53. 611

The presence is described of numerous glands in the submucosa of the ileum of the ox, close to the ileo-caecal valve. The glands have a compound structure, the epithelium of their tubules resembling that of the crypts of Lieberkühn. They are well seen within the lymphatic tissue of Peyer's patches. Attention is drawn to the fact that the only glands previously described as present in the intestinal submucosa are the duodenal glands of Brünner.—MARY C. LOBBAN.

## PUBLIC HEALTH, VETERINARY SERVICES AND VETERINARY EDUCATION

ANON. (1947.) Animal foods inspection division established [U.S.A.].—*J. Milk Food Technol.* 10. 117. 612

Canned foods prepared for dogs, cats and other meat-eating animals may now receive federal inspection when packers request and pay for this service. Authority for this service is the Research and Marketing Act (U.S.A.), 1946. The canned product must be a normal maintenance food containing at least 10% protein; 0.3% of Ca and P respectively and 0.15 mg. [?] of thiamine. At least 80% of the product must be meat or meat by-product. The Bureau of Animal Industry, Dept. of Agriculture, will administer this new inspection service through an Animal Foods Inspection Division.

HALL, O. (1946.) Livestock disease prevention and control in Canada.—*Proc. 50th ann. Meet. U.S. Live Stk sanit. Ass., 1946.* pp. 248-253. 613

See also abst. 450 (staphylococcal food-poisoning).

The Canadian Animal Contagious Diseases Act gives the veterinary organization very comprehensive powers to control importation of livestock, production of biological preparations, and control of outbreaks of infectious diseases. This, combined with Canada's favourable geographical position, has prevented disastrous outbreaks of disease among the animal population. Rinderpest and bovine contagious pleuropneumonia have never been recorded, and the only outbreak of foot and mouth disease occurred in the quarantine station in Quebec, among imported cattle. Dourine, glanders, and sheep scab have been eradicated. Mange in horses still occurs periodically, and a single outbreak of scrapie in sheep has been reported. Rabies is present in three counties of Ontario, but is being satisfactorily controlled by preventing movement of dogs. Swine fever is controlled by a slaughter policy. Bovine brucellosis and tuberculosis are serious problems.—G. B. S. HEATH.

## LIVESTOCK HYGIENE

CROWTHER, C. (1946.) Damaged grain as food for livestock.—*J. Minist. Agric.* 53. 431-436. 614

Damaged grains are never equal in nutritional value to those that are sound, but nevertheless they are a valuable food. Their sodium chloride and calcium contents are reduced and they should be introduced gradually into a ration, not to exceed one-half the total grain given.

Normal respiration in a living grain is very slight so long as the moisture content is less than 11% but if this figure is exceeded the rate of spoilage rapidly increases. Excess moisture will lead to leaching and up to 10% of the dry matter

may be lost. Should the grain germinate the rate of loss will again increase, owing to the conversion of starches to soluble sugars and proteins to amides; both are liable to further leaching. Amides are of value only to ruminants, so if damaged grains are fed to pigs there is an appreciable loss of digestible protein.

When grains are damaged by fungi, greater care is needed. If much heating has occurred, toxic compounds may have been produced from the proteins. In such cases the grains should be steamed and the liquor discarded. It is dangerous to lure cattle to eat mouldy grains by the addition of spices.—G. L. BAILEY.

## REPRODUCTION AND REPRODUCTORY DISEASES

SØRENSEN, E. (1941.) Om Metoder til Undersøgelse af Sperma og om Vaedsker til Fortynding af samme. [Technique of examination and conservation of semen].—*Maanedsskr. Dyrlæger.* 53. 84-96. 615

S. describes a method which he has elaborated by which the quality of semen can be examined in the course of 15 to 20 minutes. The principle consists in measuring the dehydrating activity of the spermatozoa with methylene blue as indicator. The more rapidly the methylene blue is decolorized, the greater is the dehydration activity, that is to say, the larger is the semen's content of fully motile spermatozoa.

When semen is to be conserved for a short time, the diluting fluids used by Russian workers are very suitable, as shown also by inseminations conducted in Denmark. For prolonged conservation, as for transport which occupies several days, the egg yolk diluting fluid of Philips is more suitable. The use of egg yolk diluting fluid in insemination within 24-48 hours does not appear to give a higher pregnancy percentage than the use of glucose-phosphate-gelatin.

The problem regarding the production of the most suitable diluting fluids still awaits solution. In this connexion more detailed studies on the life of the spermatozoa *in vitro* are necessary.—R. P. J.

INGLIS, J. S. S., & ROBERTSON, A. (1946.) The hormonal tests for equine pregnancy.—*Vet. J.* 102. 248-252. 616

An account of the efficiency of hormonal tests in diagnosing equine pregnancy is given as revealed by their routine use during the past two years. No errors were encountered with the biological blood test used in the earlier stages of pregnancy. For the tests used in the later stages, results indicate that the biological urine test is more reliable than the Cuboni test, particularly in the early part of the test period. The tests carried out in this work also emphasize the very low fertility rate amongst racehorse and hunter breeds.

—MARY C. LOBBAN.

I. JENSEN, C. C. (1941.) Modifikationer af Cuboni's Draegtighedsreaktion. [Modifications to Cuboni's pregnancy test.]—*Maanedsskr. Dyr-laeger.* 53. 46-51. 617

II. CUBONI, E. (1941.) Modifikationer af Cuboni's Draegtighedsreaktion. [Modifications to Cuboni's pregnancy test. Reply to I.]—*Ibid.* 53. 367-368. 618

III. JENSEN, C. C. (1941.) Svar paa Dr E. Cuboni's Indlaeg. [Reply to II.]—*Ibid.* 53. 369-370. 619

IV. JENSEN, C. C. (1943.) Kloroform eller Aeter som Ekstraktionsmiddel ved Cuboni's Draegtighedsreaktion. [Chloroform or ether as extractants in Cuboni's pregnancy test.]—*Ibid.* 54. 229-232. 620

I. As a quick method of obtaining the required 3 ml. of a benzene extract of urine, JENSEN adds 1 ml. of concentrated hydrochloric acid to 5 ml. of unfiltered urine and heats the mixture in a water bath for 10-15 min. After cooling it is shaken with 6 ml. benzene and a cotton wool plug is pushed through the emulsion to the bottom of the tube. Above the cotton wool the benzene phase is clear and the 3 ml. are poured off. The test may be further modified by adding 2 ml. sulphuric acid to 5 ml. of the benzene extract of urine and allowing the mixture to stand for 15 min. It is said that the fluorescence obtained in this way is just as deep as that obtained by allowing a mixture of 5 ml. extract of urine and 1 ml. sulphuric acid to stand overnight. By these modifications of the method it is claimed that three-quarters of the usual time spent is saved and that the results can be read with greater accuracy.

II. CUBONI stated that he had already described the alteration proposed in I and that he

See also absts. 602 (sterility in mares); 603 (reproduction of zebu cattle); 604 (corpus luteum); 609 (relaxin and the pubic symphysis).

did not consider that any time would be saved.

III. JENSEN maintained that there is a quantitative transition of oestrone from the benzene phase to the sulphuric acid, which is the reason for omitting the evaporation. A vigorous shaking of the acidified urine with benzene is necessary for a quantitative extraction of the hormone, but this inevitably causes the formation of an emulsion, which is removed by the cotton-wool filter. He still maintains that his method is time-saving.

IV. Extraction with chloroform was found to be more satisfactory than with benzene. Chloroform however gave as stable an emulsion as benzene. In a very small percentage of extractions made by both methods, it was difficult to read off exactly a negative pregnancy reaction. In such cases an ether extraction, made according to an adapted technique, was easier to read off and the diagnosis could be made a little more exactly. The accuracy of the previous determinations was, however, close to 100%.—H. C. BENDIXEN.

RAVERA, G. P. (1945.) Su di un allevamento razionale e sistematico di animali da esperimento (cavie) per studiare l'accrescimento ponderale e l'indice di virulenza, secondo la metodologia statistica. [Rational breeding of laboratory animals, for the study of their growth and the virulence of infections by statistical methods.]—*G. Batt. Immun.* 33. 113-139. [English, French and German summaries.] 621

An account of a g. pig colony established in August 1943 from 68 survivors when the Institute of Hygiene and Microbiology was destroyed by bombardment. By February 1945 there were 510 head on the farm, and over 200 head had been supplied for experiments. The new caviary was equipped with good ventilation and temperature control at the optimum range for breeding. Three types of g. pigs are bred, short-haired, curly-haired, and long-haired. Females are isolated immediately after mating and the young are also isolated 45 days after birth. Marking is done by a numbered ring on the hind leg, this being more satisfactory than ear marks. Weight is taken every five days and the ancestry, growth and breeding history of each individual is recorded. Thus animals identical in most respects are available for experiment. The isolation also had the result of eliminating intercurrent disease.

—R. MACGREGOR.

## ZOO TECHNY

ANON. (1947.) Disease and the weather.—*Lancet.* 253. 252. 622

The relation of climate to the incidence of certain diseases, especially respiratory disease, of

man is briefly discussed. Relative humidity does not appear to bear any correlation with the

See also abst. 524 (dust and hot weather).

## TECHNIQUE AND APPARATUS

SCHWARTING, V. M. (1946.) Use of sodium azide in isolation of Gram-positive cocci.—*Amer. J. clin. Path.* 16. 123-125. 623

S. records success with 0.02% sodium azide in blood agar, for the separation of Gram-positive streptococci from Gram-negative bacilli. Details are given for preparation of the medium.

—L. M. MARKSON.

RITTER, H. B., & OLESON, J. J. (1947.) Laboratory methods and technical notes.—*Arch. Path.* 43. 380-382. [Authors' summary copied *verbatim*.] 624

WOOLDRIDGE, W. R. (1947.) The Veterinary Educational Trust: Animal Health Fund. First Report. pp. 80. London: The Veterinary Educational Trust. 625

This report is the first produced by the Veterinary Educational Trust, setting forth its objects and its work. It commences by referring to the Third Report of the Select Committee on Estimates which emphasized the urgent need for increased activity in the sphere of veterinary education and research. Good progress has been made in adapting Balaton Lodge and Lanwades Park, near Newmarket, for use as the Equine Research Station, but delays in obtaining laboratory and other equipment, must occur before the station is in full working order. Plans for establishing a Canine Station are on the verge of fruition and negotiations for acquiring a property adjoining Lanwades Park are almost complete.

The work of the Trust is summarized as follows:—To raise, maintain and manage a Trust Fund of at least one million pounds, the income and/or capital of which may be used upon the advice of the Council for the advancement of the teaching and practice of veterinary art and science in any part of the world and in particular to promote the advancement of veterinary science in co-operation with agricultural, medical and other allied sciences so as to secure the greatest benefit to the community.

To make grants to student bodies at veterinary schools and institutions and at universities recognized by the Council as giving veterinary education.

To undertake and execute any trusts which

incidence of respiratory infections in man. Seven references are given.—M. C.

A successful presentation of the neutrophilic granules occurring in paraffin sections of the rat's and the guinea pig's marrow, liver and spleen is accomplished by applying a modification of Graham's peroxidase reaction to freshly fixed tissue prior to the dehydrating and embedding processes.

The preservation of structures and the staining properties of the tissues are not affected by the procedure.

The new procedure is considered as a tool for classifying the hemopoietic cells of the tissues.

## REPORTS

in the opinion of the Council may be conducive to the objects of the Trust.

The Trust hope to maintain liaison with the clinicians in practice and that the specialist services of the Trust developed at the stations will co-operate fully with practising veterinarians. One object is to establish veterinary hospitals in every administrative county and in cities and large towns. The diagnostic services provided by local hospitals and their laboratories would be of incalculable service to practitioners and their work.

A brief account of the research work already carried out under scholarships is given. This includes work on the tuberculin test; functional and anatomical studies; staphylococcal infections in animals; an antigrowth factor for the genus *Brucella*; studies in sheep blow-fly; resistance of animals to worm infestations; a report on an equine specialist's course in America; the use of penicillin in bovine mastitis; a survey of the work of the Equine Research Station and finally biographical notes on the executive personnel of the Trust.—D. S. RABAGLIATI.

GREAT BRITAIN. (1947.) Forty-fourth annual report 1946/1947 of the Imperial Cancer Research Fund. pp. 35. London: Royal College of Surgeons. 626

The report deals with the work done on anticarcinogenic chemicals, attempts to produce cancer of the prostate in mice, and work on mammary carcinomata in mice.

Glandular carcinomata of the prostate of mice have been produced and propagated. The method consisted of the subcutaneous grafting of strips of prostatic epithelium wrapped around crystals of 20-methylcholanthrene.—A. R. JENNINGS.

**NORTHERN IRELAND.** (1945-46.) Agricultural Research Institute of Northern Ireland, Hillsborough, Co. Down. *Nineteenth annual report, 1945-46.* pp. 31. Hillsborough, County Down: The Institute. Items of veterinary interest pp. 9, 10, 20-21 & 27. 627

**BOVINE CONTAGIOUS ABORTION.** Vaccination of calves with the S.19 strain of *B. abortus*, now routine practice, has practically eliminated abortions from the dairy herd. Only one cow of those vaccinated as calves has aborted. Three other unvaccinated cows aborted.

**PREGNANCY TOXAEMIA OF SHEEP** ("Twin lamb disease"). Seven in-lamb Blackface ewes died. Of the total of 72 ewes five were barren. 100 lambs were born. No further losses occurred after changing the flock to first year seeds and ceasing hand-feeding. The riboflavin requirement of the chick was investigated. Day-old White Wyandotte chicks were reared to 14 days old on a riboflavin deficient diet "ration A" which consisted of 30 parts each of maize meal and milled rice, 16.5 parts of wheat offals, 10 of ground nut cake meal, 10 of casein, 2 of cod liver oil, 1 of ground limestone and 0.5 of salt. This ration contained 1.3 parts per million of riboflavin. The average weight at 14 days old was 73 g. Eight groups of these chicks were fed "ration B" which only differed in having 60 parts of maize meal and no milled rice. The riboflavin content was 1.6 parts per million. The birds were offered increasing amounts of meal in amounts sufficient to allow of birds making good growth and almost to satisfy their appetite. The only variation was the amount of added pure riboflavin which varied from 0.0-4.5 parts per million. The minimum amount for optimum growth and optimum food consumption appeared to be 3.0 parts per million. The amount necessary to prevent leg weakness due to curled toe paralysis was 3.6 parts per million. The Institute was one of a number used in further experiments to control summer mastitis by use of a toxoid prepared from *Corynebact. pyogenes*. The results were inconclusive.—J. A. G.

**UNION OF SOUTH AFRICA.** (1946.) The South African Institute for Medical Research. *Annual report for the year ended 31st December, 1945.* pp. 46. Johannesburg: The South African Institute for Medical Research. [8vo]. 628

An investigation of healing changes observed in the lungs of African tuberculosis patients treated with tubercle endotoxoid has shown fibrotic changes, much more definite than in control cases, occurring in the lung lesions of most of the patients treated. Similar changes, though not so definite, occurred in g. pigs and rabbits treated with tubercle endotoxoid and immunized with endotoxoid and subsequently infected with

0.01 mg. human or bovine virulent tubercle bacilli. Comparison was made with control animals infected with the same tubercle strains. The susceptibility of various South African rodents and monkeys to the vole tubercle bacillus has been investigated. Studies are in progress in regard to the use of this type of tubercle bacillus for the vaccination of mammals.

With respect to insect control reference is made to the D.D.T. air spraying experiments by the veterinary service of the Union of South Africa as having importance for treating swampy areas and rivers in malarial areas where mosquito breeding takes place in large inaccessible swamps, marshes, pans, etc.

The production of enzyme-purified and concentrated antivenine was investigated. The polyvalent antivenine now prepared has twice the therapeutic potency of the concentrated product prepared by fractional salt precipitation. Tests show the new product is potent against colubrine and viperine snakes, particularly against the venom of *Naja flava* (Cape cobra), *Naja nigricollis* (Mfesi), *Naja haie* (Egyptian cobra), *Sepedon maemachates* (ringhals), *Dendraspis angusticeps* (mamba) and *Bitis arietans* (puff adder).

A special antivenine has also been prepared for Equatorial Africa. The venom of *Bitis gabonica* and that of *Bitis nasicornis* are included in the venoms used. Standards for use by the Permanent Standardization Commission of the League of Nations are being prepared.

Researches are in progress on the various causes of allergic reactions. It is of interest to note the paper published on CYPRESS POLLINIS in South Africa, in which mention is made of undetermined cases of hay fever and allergic conjunctivitis. Industrial allergy, manifest as asthma or allergic skin conditions, among woodworkers is mentioned. The inhalation of the powdered bodies of the sewage filter fly (*Psychoda* species) is also a cause of allergic reactions.

The report includes the details of the diagnostic work of the various departments, including pathology, bacteriology, parasitology, mycology, haematology, biochemistry and that of serum and vaccine production as well as those of the branch laboratories at Port Elizabeth and Bloemfontein.

—J. A. GRIFFITHS.

**NIGERIA.** (1947.) Veterinary Department Nigeria. *Annual report for the year 1945.* [SIMMONS, R. J.] pp. 24. Lagos: Govt. Printer. London: Crown Agents for the Colonies. 9d. 629

For the past decade the chief aim has been the control, and eventual eradication of the major epizootic diseases. Other problems have arisen in the overstocking of the Northern Province with unproductive nomadic herds, and in the protein

deficiency in the human diet in the Eastern Province, losses in stock during movement being too great to permit the use of the surplus animals of the North to relieve deficiency in the East.

RINDERPEST control has been simplified by the use of goat virus, and losses from ANTHRAX, BLACKQUARTER, and HAEMORRHAGIC SEPTICAEMIA reduced by immunization, and it is now proposed to undertake intensive work on improvement in breeding, feeding, management and marketing. The policy of wholesale immunization against RINDERPEST in the Northern territory was continued using dry or wet goat virus, the latter being obtained by maintaining a strain of virus in goats at inoculation centres and thus avoiding transport to inaccessible camps. The mortality varied from 1-4%. In Southern areas the local cattle are too susceptible for the use of goat virus, and as serum and virus have given inconsistent results, it is proposed to use spleen vaccine in this area. 847,426 animals were immunized during the year.

The only method of immunization which has proved successful against CONTAGIOUS BOVINE PLEURO-PNEUMONIA is triple vaccination, and this is usually impracticable in nomadic areas owing to the prolonged period of segregation required.

Nomadic movements favour the spread of TRYPANOSOMIASIS infection. The phenanthridinium compounds gave unsatisfactory results in laboratory tests, and tartar emetic is all that is available for treatment.

HELMINTHIASIS is said to be one of the chief causes of emaciation and stunted growth of young stock, and to cause considerable mortality. 47,066 head were treated at rinderpest immunization centres with either phenothiazine or copper sulphate and arsenic.

RABIES is widely scattered through the country, hunting dogs which have gone wild are one of the main problems in control.

No serious outbreaks of ANTHRAX were recorded. The reduction in incidence is ascribed to widespread immunization in the past. 326,585 cattle were immunized during the year. 812,074 head were vaccinated against BLACKQUARTER. TUBERCULOSIS was more widespread in unhoused cattle than supposed, and infection in 21 pigs was detected. The incidence of CONTAGIOUS ABORTION has not yet been fully investigated, but it is prevalent on Government farms. Frame drying is advocated for hides and skins in preference to shade drying.

In sheep and goats no serious outbreaks of disease occurred, whilst in pigs, diseases due to vitamin A and iodine deficiencies were encountered.

The war food production scheme was maintained during the year, butter, cheese, bacon and pork being produced under departmental supervision.

The report of the veterinary laboratory (R. W. M. METTAM) contains notes on BOVINE TUBERCULOSIS, ANTHRAX, BLACKQUARTER, CONTAGIOUS ABORTION, CRYPTOCOCCUS, PROTOZOAN INFECTIONS, EPHEMERAL FEVER, BLUE TONGUE, HORSE SICKNESS, CONTAGIOUS PLEURO-PNEUMONIA of goats and DISEASES OF POULTRY in respect of their detection in specimens sent for examination and in regard to the preparation of vaccines. Anthrax infection of a goat is recorded, and it is pointed out that this means care will be required in using goats' blood for rinderpest immunization. A disease resembling African HORSE SICKNESS was reported in the Bamenda district, but full investigation could not be undertaken.

Under the heading of research work, some observations on the technique of the preparation of dried rinderpest virus are given, the failure of *p*-arsonosophenyl butyric acid to cure *Trypanosoma vivax* and *T. congolense* infections of cattle is recorded, and a note is given on the suspected poisoning of cattle by water contaminated by the dead leaves and exfoliated bark of *Erythrophleum africanum*. A final section of the report is devoted to the veterinary school. Three courses of instruction are given, a junior one year course, a senior three year course, and a course for the grade of assistant veterinary officer for which five and a half years at Vom school are required.—U. F. R. CEYLON. (1945.) *Administration report of the Acting Director of Agriculture for 1945. Part VI. Education, science and art (D).* [SENEVIRATNE, L. J. DE S. pp. 39. Items of veterinary interest pp. D22-D29. Colombo : Govt. Press. 80 cents.

630  
The progress of the RINDERPEST epidemic which started in January 1945 is described. In all 3,585 cases were reported. In addition 1,284 cases occurred in sheep and goats while undergoing quarantine after importation from India. [In the table a mistake seems to have occurred as all these 1,284 cases are shown as having recovered; similarly 123 cases of ANTHRAX in sheep and goats are all shown as having recovered. It looks as if the heading of the column should have been "deaths" or "destroyed" and not "recoveries".] Preliminary experiments with goat-virus made towards the end of 1944 had given satisfactory results and the use of this vaccine was extended; both locally prepared virus [presumably obtained in the first place from Mukteswar] and the Kabete-Goat-Virus were used. Five carcasses infected with TUBERCULOSIS were found in the 22,758 cattle slaughtered at the Colombo slaughter-house and

ten in 4,201 at the Kandy slaughter-house. In Uva there was an outbreak of BLACKLEG with twelve cases. There was a small decrease in the number of cases of RABIES. F. & M. disease occurred in four provinces, 616 cases being reported. 1,636 specimens for diagnosis were examined at the laboratory.

Short accounts are given of the progress of the various government cattle farms and details of numbers of stock, milk production, etc., are given. Difficulty was experienced in providing sufficient pasture for the large numbers of cattle imported from Australia.

Tables show the population of various types of livestock and of the numbers slaughtered for food purposes.—M. C.

**U.S.A. (1945.) Report of the Chief of the Bureau of Animal Industry, Agricultural Research Administration, 1945.** [MILLER, A. W.] pp. 50. Washington: the Superintendent of Documents, Govt. Printing Off. 8vo. 15 cents.

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A study of the nutritive value of protein in cuts of fresh pork showed that ham, loin and shoulder meat are all high in digestibility and growth promoting values. When eaten with bread, the pork proteins tended to enhance the value of the bread proteins. Studies were also made on the means of utilizing surplus potatoes for wintering beef and dual-purpose cattle.

BOVINE TB. and tick fever are now satisfactorily controlled and the campaign is progressing for the control of BRUCELLOSIS. Investigations into the control of internal parasites in pigs showed that whey fed once a day instead of grain, or for three days every two weeks exclusive of other foods, protected the animals against most of the internal parasites.

A study of agglutinin levels induced in calves by vaccination with Strain 19 vaccine shows that considerable variations may be associated with pre-vaccinal exposures occurring during early calfhood. The results confirm present indications of a definite relationship existing between vaccinal blood agglutinin response and the history of the calf as regards the presence of BRUCELLA infection in the dam. The antibody content of the colostrum is also an important factor.

The preservation of meat, the inheritance of beef characters in cattle, feeding experiments, compressed rations for horses, the increase in egg production in poultry, research into animal disease such as infective EQUINE INFECTIOUS ANAEMIA, SWINE FEVER and ERYSIPELAS, tuberculin testing, JOHNE'S DISEASE, BRUCELLOSIS, parasites and a large number of other conditions were investigated. Veterinarians constituted 90% of the 790 professional and scientific employees. The

report ends by an account of virus-serum control and its work in the licensed establishments.

—D. S. R.

**U.S.A. (1944.) Report of the Chief of the Bureau of Entomology and Plant Quarantine, Agricultural Research Administration, 1944.** [ANNAND, P. N.] pp. 56. Items of veterinary interest pp. 21-23, 25-28 & 50. Washington, D.C.: U.S. Govt. Printing Off. [8vo.]

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Investigations were carried on to find efficient insecticides for lice, mosquitoes and other blood-sucking insects and larvicides for malaria-transmitting mosquitoes. D.D.T. was recommended for lice control in man. Tick control was effectively maintained by the use of a 5% emulsion of D.D.T. sprayed about camp premises, playgrounds, parks and kennels. This caused no injury to vegetation. Where temporary burning of foliage is not objectionable, a water spray containing 0.05% nicotine and 1.5% sodium fluoride applied at rate of 75 gal. per acre killed all stages of *Ixodes ricinus scapularis*, and *Dermacentor variabilis*.

In limited field tests a smear formula P.55, the composition which was not given, afforded good protection against screw worms, *Cochliomyia americana*, but is less efficient than smear 62 which was then in use. Wounds in animals infected with screw worms healed equally well with either preparation.

Outstanding results in controlling *Phormia regina* were obtained with a mixture of benzene and a wetting agent. A 1% D.D.T. spray was successful against cattle horn flies, *Lyperosia irritans*, the effect lasted seven days. Two-thirds of a pint of the emulsion sufficed for each animal.

Cattle grub control (*Hypoderma*) was successful with rotenone, mixed with finely ground tripoli, volcanic ash or pyrophyllite. These dilutants were found to be more effective than sulphur or talc as they penetrate the hair better. Cube or derris diluted with these substances was also found to be highly effective. Dusts containing D.D.T. were not effective against cattle grubs.

A wash containing D.D.T. and a soluble pine oil was used with a non-drying adhesive and this protected cattle, sheep and goats for 90-120 days against the spinose ear tick. Protection is increased by the spraying of troughs with equal parts of paraffin oil and used motor oil. Dips containing 5% D.D.T. protected against ticks for 3-5 weeks.

2.5 lb. of cube powder (5% rotenone) in 1,000 gal. of water used as a dip killed all motile stages of the short-nosed cattle louse. D.D.T. 0.06% in water suspension killed all motile stages of all species of cattle lice. A 1% D.D.T. emulsion killed the motile stages of lice on Angora goats and the material from one dipping remained in the

hair long enough to kill young lice hatched from the eggs present.

Aerosols containing pyrethrum were found most effective for the control of flies and mosquitoes. They consisted of pyrethrum and freon-12 (dichlorodifluoromethane). A mixture of propane and butane was found to be satisfactory as a partial substitute for freon-12. D.D.T. has also been used successfully as a substitute for pyrethrum in aerosols.

In 1943 there was a large-scale operation to control stomoxys, tabanidae and other blood-sucking flies on 562 miles of the Gulf coast of Northern Florida where the United States Army Air Forces were in training. This was repeated in 1944. The breeding places of the flies, beach deposits of marine grasses, were treated with 25% creosote in sea water.—J. A. GRIFFITHS.

—. (1945.) Report of the committee on transmissible diseases of poultry. [U.S. Live Stock Sanit. Ass.]—Proc. 49th ann Meet. U.S. Live Stk sanit. Ass., 1945. pp. 65-71. 633

This report presents an account of the year's events in the field of infectious disease in poultry. Reference is made to the control and diagnosis of NEWCASTLE DISEASE and to the progress of the PULLORUM DISEASE eradication scheme in the U.S.A., particular mention being made to the occurrence of the serologic variant in Canada. Recent work is described concerning the other salmonella organisms of poultry and also the use of sulphonamides in the treatment of FOWL TYPHOID, PULLORUM DISEASE and CAECAL COCCIDIOSIS.—J. D. BLAXLAND.

U.S.A. (1946.) Report of the Nevada State Department of Agriculture for the fiscal years ending June 30th, 1945-1946. pp. 36. Items of veterinary interest pp. 7-16 & 30-36. Carson City : State Printing Office. 634

#### BOOK REVIEW

ABDERHALDEN, E. [Professor an der Universität Zürich]. (1946.) Lehrbuch der Physiologischen Chemie. [Textbook of physiological chemistry.] pp. xiii + 417. 51 figs. Basle : Benno Schwabe & Co. [8vo.] Sw. Fr. 26. 635

Within a compass of 379 pages (29 chapters) this book deals with a large field of physiological chemistry. There are short introductions on methods, including the use of isotopes to study the fate of definite grouping in cell metabolism, and on food in relation to the gland and animal

Losses from ANTHRAX, BLACKLEG, BACILLARY HAEMOGLOBINURIA and EQUINE ENCEPHALITIS have been kept under control by systematic immunization. SWINE FEVER caused more losses than usual although animals fed on garbage were protected by serum-virus inoculation or crystal violet vaccines. The unnecessary use of virus is discouraged and quarantine measures are strictly enforced. No cases of RABIES have occurred during the past two years.

Testing of herds for BOVINE BRUCELLOSIS and slaughter of reactors are voluntary under four plans : the accredited herd plan with provision for calfhood inoculation, the test and slaughter plan, the regular calfhood vaccination plan and the special calfhood vaccination plan for range herds. In 17,011 blood tests there were 803 reactors (4.72%).

The entire State has remained since 1933 a "Modified TUBERCULOSIS-FREE Accredited Area". There were no reactors to the 5,024 tests made during the two years July 1st, 1944, to June 30th, 1946.

About 25,000 head of cattle and sheep were sprayed for cattle grub (*Hypoderma* sp.) and lice with rotenone, and for sheep tick with D.D.T. with satisfactory results. Some sulphur material was also used in dips for the control of lice. ANAPLASMOSIS of cattle remains a serious problem. SCABIES of cattle has not been introduced from infected neighbouring States.

Losses from predatory animals (mainly coyotes) have been the lightest recorded. Lethal bait stations used strychnine.

RODENT CONTROL consisted primarily of control of pocket gophers and ground squirrels. Other species requiring attention are kangaroo rats, field mice, rock chucks, brown rats and house mice. Poison gas and poisoned grain are used. The beaver is controlled by live trapping.—J. A. G.

organism. Fats, lipoids, steroids, carbohydrates, proteins including nucleoproteins and chromoproteins, (haemoglobin, etc.), inorganic food constituents and general metabolic exchanges in the body are dealt with. The vitamins are described in two chapters which also include the pituitary, thymus, parathyroid, pineal, lymphatic tissues, and secretion for good measure. Various enzyme systems are also discussed. There is much of interest in this book but, in some places, compression and condensation have left little of value.

—J. M. ROBSON.

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